# finish

ceramic finishes on metal

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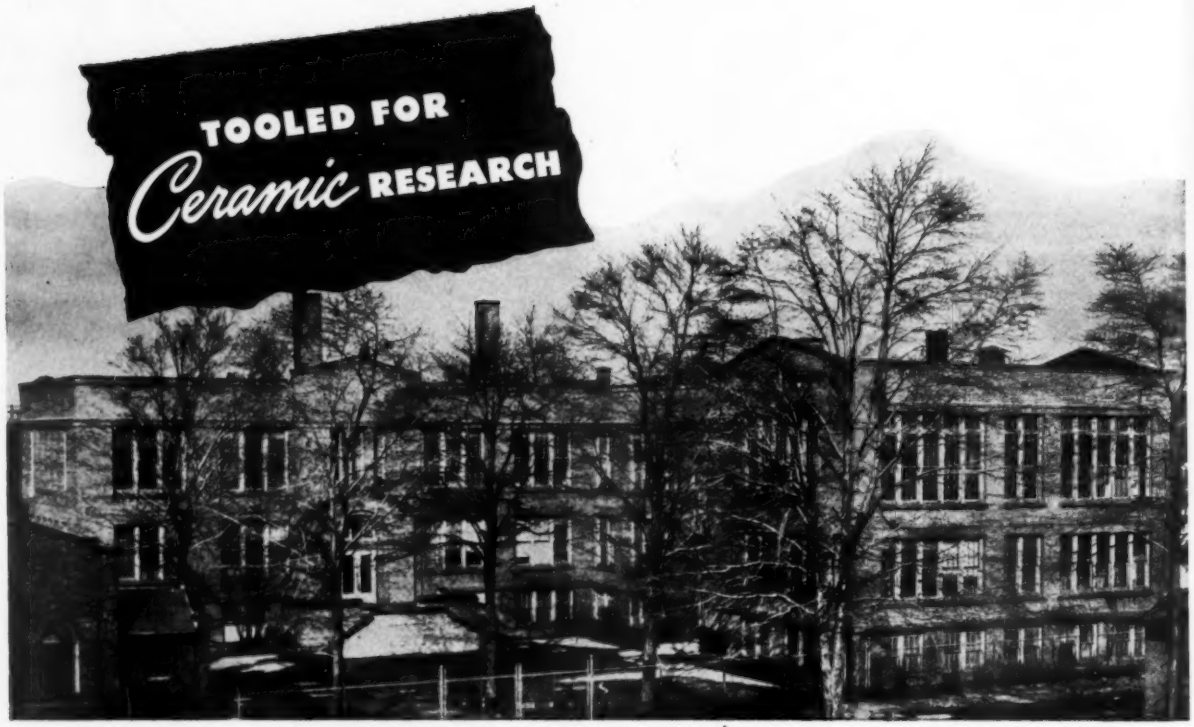


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# THE Finish Line

SEE AN IMPORTANT EDITORIAL ANNOUNCEMENT ON PAGE 27.

**LET THERE BE LIGHT**—and lots of it. We believe that beyond a question of a doubt the best way of assuring a continued source of satisfactory light, whether it be for a large industrial plant or the modern office, is through the use of porcelain enameled reflectors — but — everyone does not agree on this point.

### The only satisfactory finish for incandescent reflectors

No one has as yet devised a satisfactory reflector other than porcelain enameled steel for use with incandescent lighting. Even during the war, when other materials were substituted for steel in every possible product, the necessary metal was allotted for porcelain enameled steel reflectors of the incandescent type.

An exception to this, of course, is for spot lights or other reflectors where a controlled beam is required. Porcelain enamel has never laid any claim to this feature. By the same token, its high percentage of "diffuse" reflectance makes it the ideal source for general lighting of all types.

The highly publicized "indirect lighting" brought popularity to bright metal reflectors for office use. The advocates of this type of lighting, we believe, have overplayed their hand, for there are conditions under which 500 watt lamps and indirect fixtures have failed to give as satisfactory lighting as an ordinary 60 watt lamp properly installed near the work surface.

### The trend to fluorescent

All we need do is take a good look around in the newer plants, and many new office installations for that matter, to see the strong trend to fluorescent lighting. Here substitute materials *can* and *have* been used.

During the war it was proved that non-metallic reflectors could be used successfully, at least on a temporary basis. This was a war emergency measure and should not materially affect production of steel reflectors for future use.

### Watch out for paint

There is one point in the temporary reflector picture that *will* have a definite bearing on the porcelain enameled steel reflector for fluorescent lighting. It is the tremendous acceleration in the use of paint for reflecting surfaces.

A swing back to the use of steel for these reflectors will not necessarily mean a swing away from paint. The paint manufacturers have this business now and they want to keep it. Surely, *we* know that on the "long pull" there is no painted metal reflector that will give the satisfactory service, freedom from maintenance and long life of porcelain enameled metal. In many instances the large buyers of reflectors do *not* know this, and unless they are convinced by those reflector manufacturers who know the facts, backed by the enameling industry as a whole, we may expect to lose a big slice of valuable business in this important field.

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You will read more about reflectors later in *finish*. In the meantime, while this issue goes to press, your editor is going to make a noble effort to get at least a 17 pound "Muskie" on "the finish line."

Dana Chase

*Editor and Publisher*

# wider use of VITREOUS ENAMEL results from Inland Research

Old markets can be expanded and new markets developed with Inland TI-NAMEL —the new vitreous enameling alloy steel recently released by the Inland research laboratories.

A thin finish coat—white, or any color—is applied directly on TI-NAMEL. The labor and equipment commonly needed for applying a ground coat are eliminated. This one advantage of Inland TI-NAMEL saves many man-hours and opens up extra floor space for increased production. TI-NAMEL also cuts shop costs by reducing re-operations, edging, and scrap. Furthermore, it simplifies metal shop operations because it has all the forming qualities of the finest deep drawing steels.

Look to Inland for modern steels for modern products.

Write for the new TI-NAMEL Bulletin! Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill.

Pending patent applications on the new enameling process and products made thereby are owned jointly by Inland Steel Company and Titanium Alloy Manufacturing Company under trust agreement.

*Principal Products:* Bars, Floor Plates, Piling, Plates, Rails, Reinforcing Bars, Sheets, Strip, Structurals, Tin Plate, Track Accessories.

*Sales Offices:* Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

**INLAND TI-NAMEL**

# Uncle Sam needs porcelain enamel in time of war

## the production of war essential porcelain enameled hospital ware

By W. N. Lybarger • ASSISTANT TREASURER, JONES METAL PRODUCTS COMPANY, WEST LAFAYETTE, OHIO

finish

During the war period while aluminum, stainless steel and other similar materials are being used in the production of fighting materials, enamelware has proved itself a vital product which answered all of the specifications for requirements under the Health Supply Division in the Civilian Durable Goods Branch of our war program.

The application of a tough vitreous ground coat fused into steel creates a protective surface capable of withstanding all reasonable impact tests. In addition, it answers all requirements for heat resistance. Cover coat enamels then give the properites of acid resistance, high reflectance (when needed), and a smooth glossy surface which is sanitary and easy to keep clean.

### Few conversion problems

During the war period our company has been one of the fortunate ones, having few conversion problems, due to the fact that hospital and health supply items such as we produce have been considered essential. We have been manufacturers of hospital ware almost exclusively, and have had the good fortune of continuing at near capacity with our regular line of production.

In addition to manufacturing hospital ware we have, since 1929, made a line of enameled electric light reflectors. During the past two years these reflectors have been used on hundreds of Liberty Ships, in newly constructed war plants, in ordnance depots, on air fields, in prison camps, and for many other military purposes. These reflectors range from small units of 8 inches in diameter to 1000 watt floodlights for air fields.

During this war period, whenever possible, we have diverted as much available press capacity as we could to the manufacture of steel fabricated items used in some types of shells and, further, have made some parts for the airplane industry.

### The enamel division

In the enameling division our plant is equipped with one continuous coal-fired furnace and one box-type furnace. The latter is used for large types of reflectors and is loaded with an air fork. It is our belief that there are very few coal-fired automatic, continuous enameling furnaces being used in the industry. However, due to the fact that we are in the heart of the Central Ohio soft coal region, we find it economical and advantageous to use this type of fuel.

This continuous furnace is fired with five stokers — one for the preheat chamber and four for the hot zone. The stokers are located in a room at one side and below the continuous furnace. Coal is delivered to the stoker hoppers through a conveyor tube from a large storage bin outside the building.

The drier through which the enamel ware passes after the enamel is applied is also of a coal-fired, recuperator type. The drier is of a continuous chain design and is capable of handling all types and sizes of ware which we produce.

### A trip through the plant

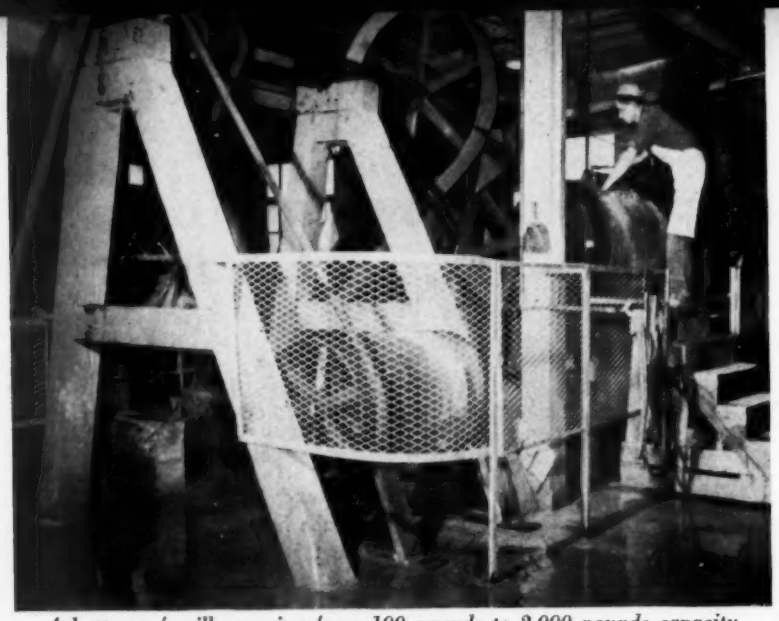
To get a quick description of our plant, let's follow one of the principal items we manufacture from fabricating through to the shipping department.

One of the main items in the hospital line, which has been directly utilized by the Army and Navy, is bed pans. For a number of years the Jones Metal Products Company have manufactured several styles of these bed pans, both in seamed and seamless types. While the line has been simplified during wartime to include only one design, it is still manufactured in both the seamed and seamless types.

Pans are first drawn in two sec-

*An informal snapshot of the author in his office at Jones Metal Products Company, West Lafayette, Ohio.*

FINISHFOTO



*A battery of mills ranging from 100 pounds to 2,000 pounds capacity.*

*All enamel is stored in tanks which are finished in ground coat enamel.*

*Three of the presses used for drawing the metal shapes prior to enameling.*

tions. The upper section from 25 gauge steel and the lower section from 24 gauge steel. These drawings are made on Bliss Presses. From this operation the top shape is then run through smaller presses which blank out the seat design, and is then carried further to a beading press where the cut out section of the seat is beaded over and rounded out.

The top and bottom sections are then put through a small flanging operation to give the necessary offset so that the top section fits over the lower section at the time of seam welding.

**Simplified welding aids production**

It was our former practice in the manufacturing of the seamless type bed pan to seal the top and bottom section on a seam welder, and then gas weld this seam to give a perfect seal. This was followed with a rolling process to take out the roughness and then a grinding process to flatten the seam of the weld.

We have since been able, through the installation of a special design of seam welder, to eliminate the operation of gas welding entirely. This gives us a smoother seam surface and has cut out one major operation in the production of the pan. Where we formerly had six welding stations in this department, we now get production from one large Federal Synchronized seam welding machine through this simplified procedure.

Although the elimination of gas welding did not eliminate the rolling and grinding processes, these two operations were considerably speeded up due to the fact that it was no longer necessary to grind off the excess flow of metal produced by gas welding. The rolling operation merely flattens out the weld and the grinding reduces the surface from a knurled to a smooth finish so as to produce the seamless effect. The increased production developed further compensated for the elimination of gas welding.

In the welding department the Bed Pans are loaded into extruded metal pickling crates and delivered to the pickling room. This method eliminated one handling as well as the possibility of dinges. In the pickling

room we use a continuous tank process consisting of cleaner, rinsing, acid, second rinse, and neutralizer tanks. The fluid in these tanks is heated from processed steam from the boiler. After the ware has come through the cleaning and pickling process, it is lowered into a gas fired oven for drying.

Our tanks are small compared with many modern enameling plants, as none of our ware is of sufficient size to make large tanks necessary.

**Enameling**

We purchase our frit from a commercial frit manufacturer, and all milling is done in a mill room immediately adjoining the room where the enamel is applied.

There is a battery of mills ranging from 100 pounds to 2000 pounds capacities. The larger mills are utilized in the processing of ground coat and half finish, while the smaller mills are used for the purpose of milling beading enamels and acid resisting finish coats.

All milled enamel is stored in rectangular steel tanks which have been finished in ground coat enamel. The one-piece lids for these have hand grips for convenience, and they are also porcelain enameled. We find these storage tanks very practical, as they eliminate any possibility of contamination and are very easy to keep clean.

Most of our ware is enameled by the "dip and shake" method, similar to kitchen ware plants. While some stippled ware is produced, a great majority of hospital ware has one ground coat and two white finish coats. Acid resistance is important on most of the ware due to the nature of its uses. For dipped ware that is stippled, a small hand operated "stippling machine" is located at the dip tank so that the two operations can be handled by the same operator.

The drier chain forms a loop in the enamel room so that ware can be hung directly on this chain at every point where enamel is applied.

Within the center of the revolving table are the containers of beading enamel. As several types of ware come through the drier at the same time, the various kinds of ware are

*Most of the ware is enameled by the "dip and shake" method of application.*

*The "merry-go-round" brushing and beading table. Drier conveyor is at right.*

*All items of hospital ware are carefully inspected before packing in cartons.*

*Seam welding bed pans on large synchronized seam welding machine which replaced six gas welding stations formerly used.*

segregated on the beading table so that each beader has one or two varieties of ware to bead as the table slowly revolves around her. In this way more efficiency is gained, as the beader becomes accustomed to the necessary beading stroke needed for the class of ware upon which she is working.

The ground coat is dipped and burned on separate shifts from the finish coats. This eliminates the possibility of ground coat enamel flaking off the tooling on to the finished white, inasmuch as the drier tools are cleaned after ground coat dipping has been finished on each trick. In this same manner the ground coat is fired separately on the continuous furnace.

In rotating the shifts in this manner the ware comes down from the Pickling Room to the Enameling Department where the ground coat is applied. The ground coat is then fired, and, depending on the type of ware, is either loaded into trucks or returned to the dippers on the continuous drier chain. The ground coat is then stored, either in the trucks or in racks where the first coat dippers on the following shift then apply first white. After the burning of the first white coat the ware is again returned to the dipping department, either by drier chain or by truck. Here the finish dippers on the first trick apply the finish coat.

In addition to the triple coat white ware we also make a speckled blue and speckled gray bed pan. Other than these two colored coats all ware is white with the exception of racks for various types of sterilizers which are coated with a special dark hard surface enamel.

### Merry-go-round brushing table

As the continuous conveyor leaves the drier, it passes a motor-driven doughnut shaped, padded brushing and beading table. This table is so arranged that the brushers and beaders can work both inside and outside the doughnut ring. Ware is transferred from the drier chain to this revolving table and beaded immediately. The continuous furnace chain is located parallel to the drier chain, on the opposite side of the revolving table. Due to this arrangement, the slowly revolving table carries the beaded ware to within four feet of the furnace chain, a convenient transfer distance.

After the finished ware is taken from the continuous or box furnaces, it is then loaded in trucks and delivered to the Inspection and Wrapping Department.

Items of hospitalware are inspected for dinges, enamel application, beading, finish, and general appearance.

Reflectors are inspected for enamel application, application of the outside green coat and reflectance of the inside white coat. In the Reflector Department the assembly of fittings is then attached to the reflector and packed in cartons according to the type of reflector.

### Comments from abroad

During the past two years much enameled hospital ware has been manufactured for export shipment. We have received letters from nurses, soldiers and sailors in all parts of the world telling of having seen and used this ware. The comments, of course, were particularly interesting from men in the Armed Forces who come from our own vicinity, a number of whom have worked in our plant. One such letter from a former employee came from Africa; another, from Burma; etc.

Although the restrictions on various types of items permitted to be manufactured have been lifted, we intend, for some time at least, to restrict our production to the lines which we have made during these war years in order to continue servicing hospitals, doctors, and drug stores with hospital ware items.

In the classification of hospital ware items there is a considerable demand in the export field for this same type ware, especially irrigators, urinals, and medicine cups, along with the bed pans.

It is very gratifying to know that enameled hospital ware has served a definite need as an essential war product. With reasonable care and handling, enamelware will prove as durable as any other type of ware in the hospital line. With the glass coating application to steel it certainly is as sanitary as any type ware, and the application of porcelain enamel to steel gives it all of the properties for easy cleaning and continued sanitary appearance.

We are proud that we have a record of nearly twenty-five years in the manufacturing field of hospital enamelware, and during the past three years it has been definitely proved that enameled hospital ware has played an essential part in the war effort.

*Finishfoto of Architectural Division Chairman Spencer in action.*

**AT THE organization meeting of the Architectural Division of the Porcelain Enamel Institute in Cleveland on July 10 (See report in August *finish*), the following outline of the aims and objectives of the group was presented:**

**1. To develop and promulgate high quality standards in manufacturing, service and erection.**

**2. To quicken public and professional acceptance of porcelain enamel by sponsoring in the Division only such installations that will redound to the credit of the industry.**

**3. To cooperate in all ways with the architectural, engineering and building professions and to provide them with all information and data that will enable them to acquire a fuller appreciation of the values of porcelain enamel.**

**4. To solicit the actual support in furtherance of the aims and objectives of all manufacturers engaged in and interested in architectural porcelain enamel.**

**5. To cooperate with the Market Development Committee of the Institute in its endeavors to expand architectural porcelain enamel fields.**

**6. To promote research as the basis for product improvement.**

*Institute Managing Director Mackasek is pleased with the meeting.*

# SNAPSHOTS AT THE ARCHITECTURAL MEETING

*Clockwise: Axilrod of Textlite, McMillan of Ingram-Richardson; Foster of Enamel Products, Rena Hall Ely (Steno-secy.); Thompson & Persons of Enamel Products; Duffy, legal counsel; and Mackasek, P.E.I.*

*Clockwise: Johnston of Ellwood City Iron & Wire; Longwell of Republic Steel; Spencer of Erie; Walbridge of Porcelain Metal Prod. Co., Pittsburgh; and Hansen and Bryant of Ferro.*

*Clockwise: Harper of Erie Enameling; Barrows of W. A. Barrows Porcelain; Holcomb & Dwyer of Wolverine; Block of Carnegie-Illinois Steel; and Dadisman of Armco.*

FINISHFOTOS

# Antimony-vs-Zirconia opacified enamels

**a comparison of the properties of the two types of enamels based on laboratory research data**

*By Burnham W. King, Jr.* • DIRECTOR OF CERAMIC RESEARCH, THE HARSHAW CHEMICAL CO., CLEVELAND, OHIO

finish

As the result of extensive research carried on by a number of companies and individuals in the enameling industry, a type of composition known as an "antimony-free", "zircon" or zirconia-opacified enamel has been produced. In some applications, this newer enamel has been quite successful in competing with the longer established, super-opaque, antimony opacified enamels. However, it should be recognized that there are some uses for which these zirconia opacified enamels as we know them today are entirely unsatisfactory. Further developments are being made and eventually the undesirable characteristics may be eliminated. In general, it should be realized that there is no one perfect enamel which is best for all applications. Instead, each composition represents a balancing of properties by the frit maker in order to give an enamel which, in his judgment, contains the greatest number of desirable qualities and the least number of undesirable ones. At this time, it would seem advantageous to review the properties of the antimony and the zirconia-opacified enamels so that the user may know the good qualities and the limitations of each type.

To further limit the scope of this article, only the super-opaque type will be dealt with. Considerable research has been done on moderately opaque zirconia opacified enamels for use on hollow ware; but to the best knowledge of the author, compositions of this type have not as yet been used extensively in commercial practice.

### Review of Properties

Antimony super-opaque frits are essentially soda-alumina-boro-silicate glasses with small amounts of various other materials. In this clear glass is dispersed an antimony, calcium, oxygen and fluorine compound of high refractive index which is responsible for most of the opacity. This compound is formed during the early stages of smelting, and remains with minor changes during the subsequent smelting and firing.

The zirconia opacified enamels are also mainly soda-alumina-boro-silicates but they usually contain less soda and silica and more alumina, boric oxide, and fluorine than the previous type. The opacity of the zircon enamels is largely due to the precipitation of extremely small crystals of zirconia during firing.

From this brief summary it is seen that the two enamels are inherently quite different, the antimony enamel being relatively high in soda and

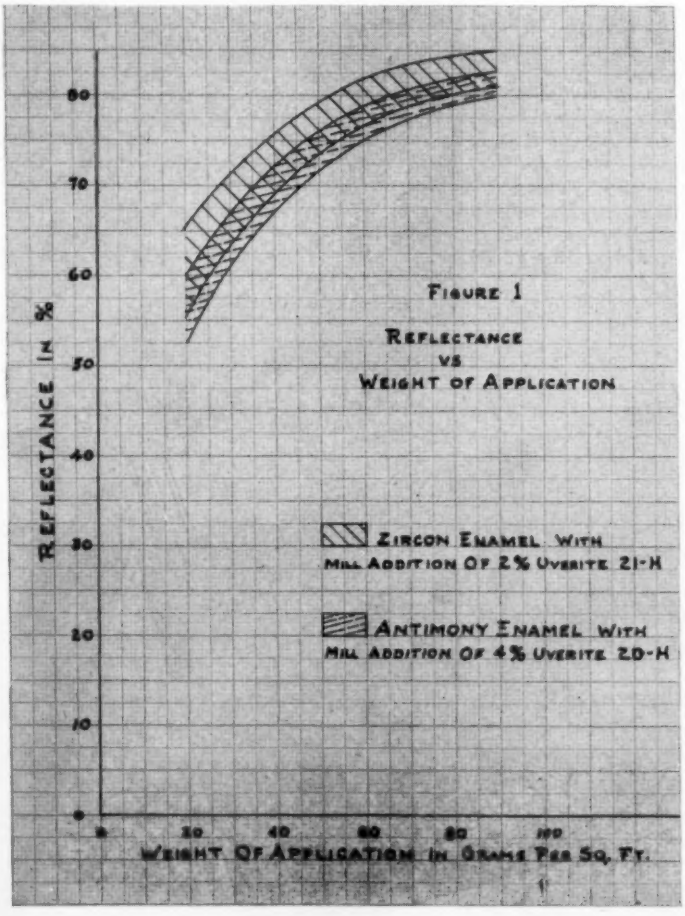



FIGURE 1
REFLECTANCE
VS
WEIGHT OF APPLICATION

silica and having a stable opacifying compound, and the zircon enamel high in alumina and boric acid and having its opacifying compounds crystallize during firing. It is to be expected that the latter type is less acid resistant and more variable in opacity. To what extent these difficulties are overcome is shown in the data which will follow.

### Opacity

Both the antimony and the zirconia-opacified enamels considered in this article are classed as super-opaque. However, the reflectance of the zircon enamels is usually definitely higher for the same weight of application. Data on the range for typical commercial frits milled and fired according to standard practice are shown in Figure 1.

Zircon enamels as a class are inclined to show more variation in opacity, depending upon the firing schedule. The better enamels, however, show little variation within the range of commercial practice. Data showing the variation of reflectance with firing temperatures for typical commercial enamels are given in Figure 2. It is to be noted that the rate at which the opacity increases as the firing temperature is raised, or the stability of the opacity, varies considerably with the different compositions.

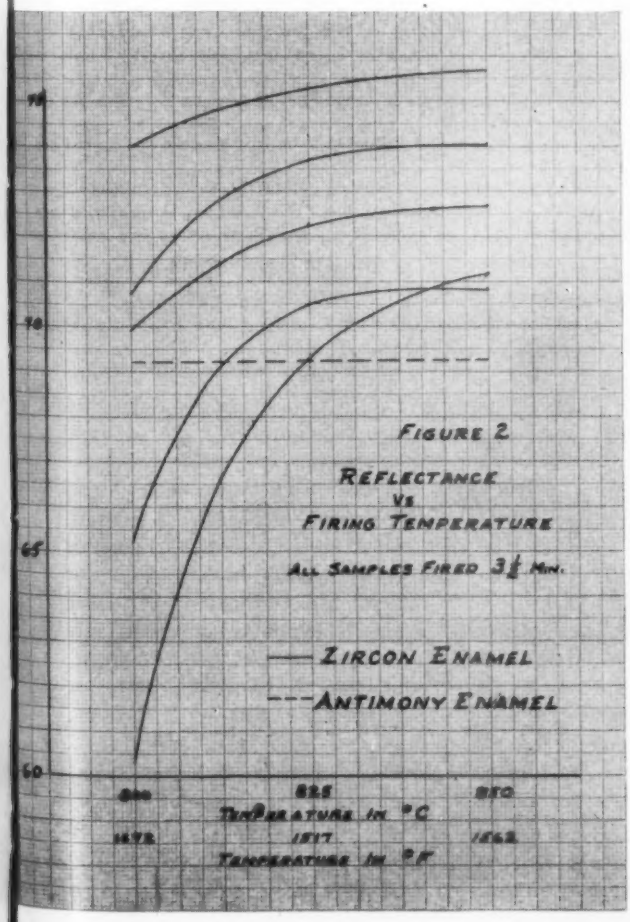
There is usually a noticeable difference in the way in which the two types of frits work with different opacifiers. In general, gas-opacifiers are more effective in the zirconia bearing compositions and show less tendency toward an eggshell surface. However, since some zirconia enamels are more readily opacified in this manner, the gas given off during firing by the clay in the mill addition may produce all of this type of opacity that the enamel can stand. If a gas-opacifier is added to one of these, the fired enamels may be so full of bubbles as to be weak, easily scratched, and in some cases show a decided loss of gloss.

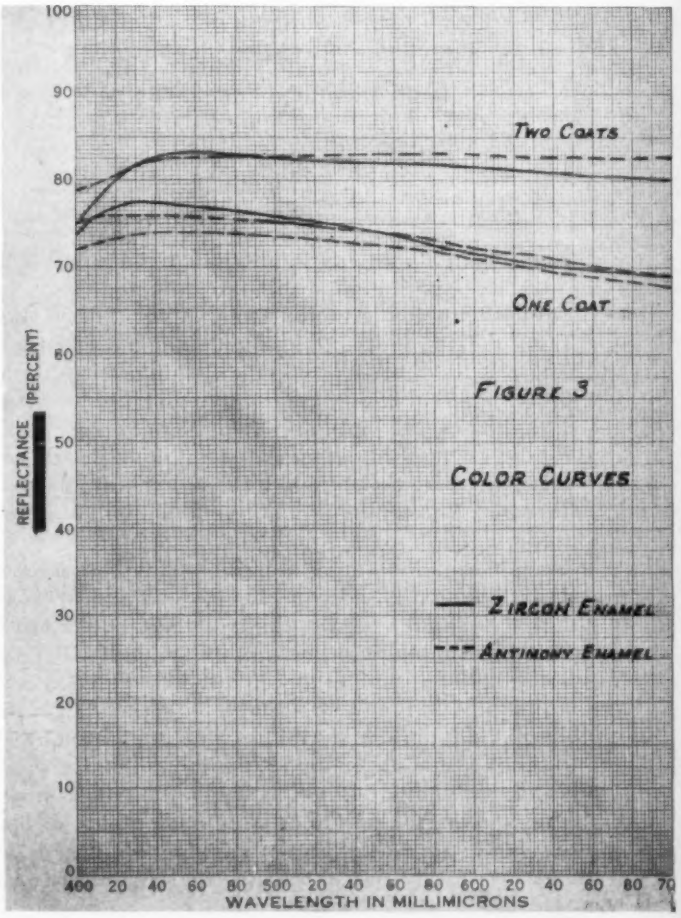
### Color

Along with the differences already noted in the opacity of the two enamel types, there is also usually a difference in the color of the two types which affects apparent whiteness. In general, for the same weight of application, the zircon enamels usually appear slightly blue-green and the antimony enamels slightly purple. It should be noted, however, that these small differences vary greatly with enamel composition, firing time, and weight of application.

### Surface

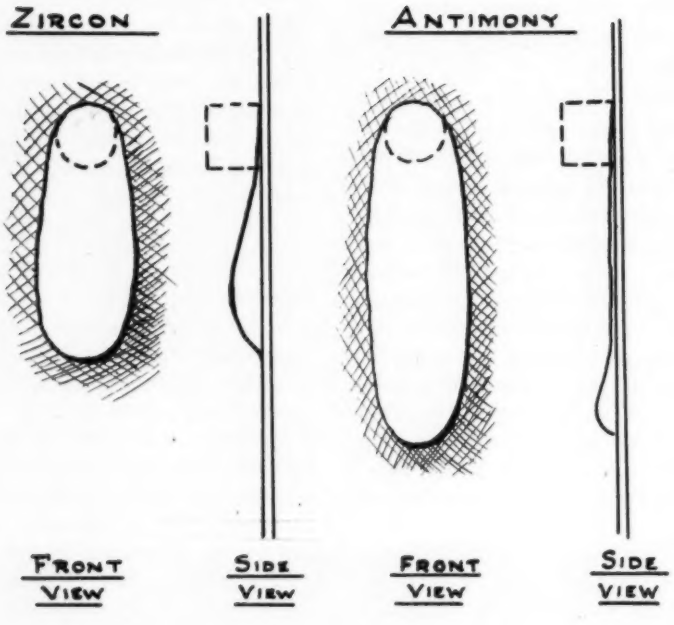
In general, a zirconia-opacified enamel has a smoother surface and a higher gloss than an antimony enamel of the same firing range. This is apparently due to several causes. First, the zircon type starts to soften and flow the way a liquid, a clear



## Flow Test

Figure 4




glass, or a ground coat enamel would. Then, as the zirconia crystallizes, producing opacity, the flow of the enamel is slowed because the enamel then behaves like a plastic solid. With an antimony enamel the crystalline material is always present, with the result that enamels of this type act as though a certain yield value had to be exceeded before flow would start. Thus, if the enamels are to be fired at the same time and temperature, the antimony enamel must have a longer flow as shown on a flow test because it does not start to flow as readily, and since it does have a longer flow it will have more of a tendency to sag. A flow test on two enamels having the same firing range is shown in Figure 4. This test was made by first heating a button of dried enamel slip on a ground-coated steel plaque placed horizontally in a furnace. After heating for two and one-half minutes at 1520°F., the plaque was tipped to a vertical position and allowed to heat seven and one-half minutes longer. The longer flow of the antimony enamel is to be noted.

Another characteristic of the zircon enamels, which probably helps them to level out and cover minor defects without sagging, is their tendency to blow slightly and then smooth out during firing. This tendency is readily observed by watching the flow test while the plaque is in the furnace. While this property has its advantages, it also has its disadvantages. These enamels have a fairly hard surface but the under layer is full of bubbles, thus producing an enamel which is less resistant to scratching than one of the more solid enamels of the antimony type. On overfiring, the surface becomes very poor as the larger bubbles from below tend to come up through the glassier surface layer.

### Working properties of slip

On the whole, the zircon enamels do not of themselves produce slips with as good working properties as those of the antimony type. In general, they tend to have a stringy consistency and rather low set. Also, the dry film strength is usually rather low. To correct these difficulties special mill additions have been necessary. Small quantities of sodium nitrite and potassium carbonate have been used to overcome the naturally low alkali content. A small amount of gum, bentonite, or montmorillonite is sometimes added to improve the dry film strength. A little tetrasodium phosphate is frequently added to give better milling properties. These additions are reasonably successful, as is attested by the wide use of zirconia opacified enamels.

### Chemical durability

One property in which the antimony and zircon type enamels show considerable difference is in their resistance to chemical attack. In general, the antimony super-opaque enamels are much more resistant to acids. This difference is more pronounced when the enamels are subjected to a prolonged exposure than when they are given the standard fifteen minute spot test with ten percent citric acid. An example of this is the results obtained on a test such as that specified by the Enameled Utensil Manufacturer's Council for hollow ware. In this test, the enamel is exposed to boiling ten percent citric acid for two and one-half hours. After this treatment, the antimony enamels appear badly etched and show a weight loss of 0.01 to 0.02 grams per square inch, but super-opaque zircon enamels are usually entirely eaten away and the ground coat as well is attacked. The general

*to Page 54* →

ou had a choice,
ich would you prefer?

| | NATIONAL SAMPLE — House wife | Balanced | Career | Total | WHC* Group |
|---|---|---|---|---|---|
| eep house | 87% | 37% | 6% | 61% | 67% |
| ave a job | 3% | 12% | 77% | 15% | 12% |
| o both | 6% | 47% | 11% | 20% | 15% |
| Can't decide | 4% | 4% | 6% | 4% | 6% |

finish Exclusive feature

# HOMEMAKING AND APPLIANCES

## A psychological survey

### a new type of survey that should interest every appliance manufacturer

*By Ada Bessie Swann* • WOMAN'S HOME COMPANION, THE CROWELL-COLLIER PUBLISHING COMPANY, NEW YORK, N. Y.

**PART II**

LAST month we learned from the psychological survey that women by their attitudes toward housekeeping put themselves, according to Dr. Dichter, the psychologist, into three different classes: *The housewife*, who is completely overwhelmed or monopolized by her homemaking. *The would-be career woman*, who continually wishes she were doing something else besides keeping house and who boldly states that she hates housework. *The balanced homemaker*, who does both housework and work outside of her home and enjoys both.

**These women answer questions**

To the following question, "Do you get any real satisfaction out of housekeeping?", the women of the three groups show by their answers a wide latitude in attitudes toward the job of housekeeping. 91 per cent of the women who devote all their time to the job of homemaking, and who in this survey are referred to as "Housewives", said they get a real satisfaction out of housekeeping, while only 12 per cent of the "Would-Be Career" women like housekeeping. Among the "Balanced" women, or the group who do both homemaking and work outside of the home either on a paid or voluntary basis, 88 per cent reported that they, too, got a real satisfaction out of housekeeping.

To the question "Do you like to use mechanical appliances in your housekeeping? If so, why?", we find the following answers: 70 per cent of all women said mechanical appliances make housework easier. 47 per cent said that these same appliances saved time. 22 per cent thought that the work was done more efficiently with mechanical appliances than when done by hand. Only 2 per cent reported that the mechanical appliances were more sanitary. Certainly this indicates there is a need for educational, promotional, and advertising jobs to be done with emphasis on the cleanliness, healthfulness, and easy-to-clean features of household appliances with porcelain enamel finishes.

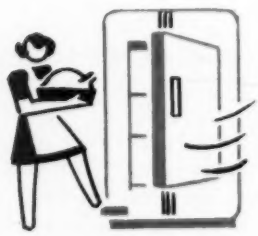
**What women want in a refrigerator**

Because more women have been doing more work in their own kitchens during the war, they have become better acquainted with the appliances they have. They have found what to them are inconvenient features of the refrigerator, the range, the washing machine, the vacuum cleaner, the iron. It is interesting to learn some of the features that women call unsatisfactory; in many cases their answers show definitely that they are using appliances that were out-moded before the war began and lack many of the convenient features of the mechanical appliances that were on the market in 1941, when manufacturers discontinued the making of household appliances and converted to manufacturing products for the war.

32 per cent of the women have said they would buy a new refrigerator when they become available. They would like refrigerators with a compartment to store several packages of quick-frozen foods, a cabinet with rounded inside corners and seams for easier cleaning, automatic defrosters, adjustable shelves. 33 per cent

***Which of the following alternatives would you want in a new range, bearing in mind that they may raise the price?***

| | | NATIONAL SAMPLE | | | | W.H.C. |
|---|---|---|---|---|---|---|
| | | *Housewife* | *Balanced* | *Career* | *Total* | *Group* |
| A– | A warming oven | 42% | 42% | 37% | 41% | 45% |
| | or | | | | | |
| | Storage space | 39 | 42 | 40 | 40 | 41 |
| | No preference | 19 | 16 | 23 | 19 | 14 |
| B– | Broiler in oven | 30 | 29 | 20 | 28 | 35 |
| | or | | | | | |
| | Broiler separate from oven | 38 | 44 | 53 | 41 | 41 |
| | No preference | 32 | 27 | 27 | 31 | 24 |
| C– | Broiler same height as oven | 39 | 40 | 39 | 40 | 41 |
| | or | | | | | |
| | Broiler below oven | 23 | 25 | 22 | 23 | 23 |
| | No preference | 38 | 35 | 39 | 37 | 36 |



***Please check which of the following improvements you would like in a refrigerator, bearing in mind that some of them may raise the price:***

| | NATIONAL SAMPLE | | | | W.H.C. |
|---|---|---|---|---|---|
| | *Housewife* | *Balanced* | *Career* | *Total* | *Group* |
| Automatic defrosting | 68% | 72% | 63% | 69% | 76% |
| Compartment to store quick frozen foods | 64 | 69 | 72 | 66 | 81 |
| Adjustable shelves | 44 | 50 | 37 | 46 | 67 |
| Rounded inside corners and seams | 36 | 41 | 30 | 37 | 50 |
| Larger size | 34 | 31 | 33 | 33 | 46 |
| Revolving circular shelves | 30 | 31 | 36 | 31 | 41 |
| Water tank with faucet outside | 39 | 42 | 41 | 40 | 35 |
| More ice cube capacity | 25 | 30 | 27 | 27 | 24 |
| Glass door or windows | 24 | 25 | 25 | 25 | 23 |
| Box made to avoid stooping | 27 | 24 | 25 | 26 | 22 |
| Two doors—top and bottom | 10 | 10 | 7 | 10 | 19 |
| Box same height as range to use top as work surface | 6 | 7 | 5 | 6 | 13 |
| Two doors—left and right | 8 | 10 | 10 | 9 | 12 |
| Smaller size | 3 | 2 | 4 | 3 | 2 |

indicate they would like a larger refrigerator than the one they are now using.

The question "What suggestions do you have for making refrigerators more convenient to use?", brought forth a great variety of suggestions; a few stood out prominently above all others. Foremost among them were two which concern frozen foods: women want a special compartment to store packages of frozen foods, and a built-in unit for fast freezing.

The next most frequently expressed wishes are for more hydrator space, for space to store tall bottles, followed by two other requests for specially allotted space for vegetable storage and meat. Likewise, a good many specified a space to keep fruit, while a special butter compartment was mentioned by a conspicuous number.

A device which would appeal to many is a built-in ice cream freezer with an automatic stirring device. This suggestion was well up at the head of the list, plus a wish to be able to keep bought ice cream frozen.

Other conveniences women would like are easier ("automatic," said some) removal of ice cubes, a way to open the door without using hands, as well as trays, drawers and shelves that slide out easily.

Let some of the women tell in their own words what they want:

"I'd like a section for quick freezing of foods which wouldn't necessitate lowering the temperature of the whole refrigerator."

"I'd like to freeze foods from the garden rather than can all of it."

"Since I do not run to the store every day, I could very nicely use an extra large frozen food storage space. I am thoroughly sold on frozen foods."

"I'd like a place to keep meats cold without freezing them solid, yet cold enough for safety."

"Would like a large separate part of refrigerator for things that do not need low temperature—many fruits, vegetables, mayonnaise, fats, bread, etc., need a place that is cool but not cold."

"Automatic sliding shelves—operated with push button."

### What women want in a range

33 per cent of the women questioned said they would purchase a new range after the war. They gave the following answers to the question "What suggestions do you have for making ranges more convenient to use?"

Among the various ideas women have for improving their ranges a half-dozen or so are uppermost in their minds, with two especially standing out at the head of the list.

First of all is the problem of keeping the range clean. Over and over again they made the plea, "give us a range that is easy to clean."

The next important suggestion has to do with the height of the range: They have to stoop to reach the oven and broiler so they say time and again, "We want a higher oven to avoid stooping."

Following these two outstanding requests, the other items most in demand are: deep well cookers, better insulation to prevent loss of heat in cooking as well as heating up the kitchen, and automatic heat control.

Burners came in for considerable comment: They want more of them, and more space between them.

Work space on top of the stove — a table-top arrangement — makes strong appeal. Others want more storage space, and two ovens were specified numerous times. Allied with the predominating problem of keeping the range clean is the request for construction of rust-proof materials.

The pilot light system was on the minds of a number of women. They request a better system generally, and oven pilots specifically.

As in the case of the refrigerator, a device to open the oven door without hands would be widely appreciated.

Prominent also was a desire for a special place to keep seasoning containers.

Here are a few quotations from the women themselves on these and other suggestions:

"Would definitely like divided cooking top with work surface in center. This is such a big help in keeping pots from being pulled over as you can turn the handles in."

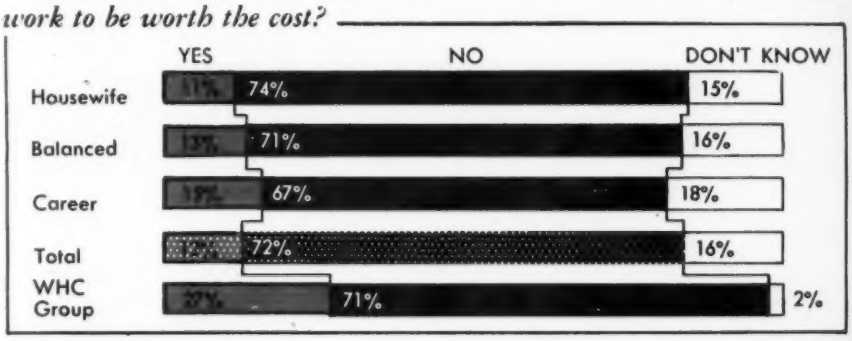


*Are you planning to buy a washing machine after the war?*

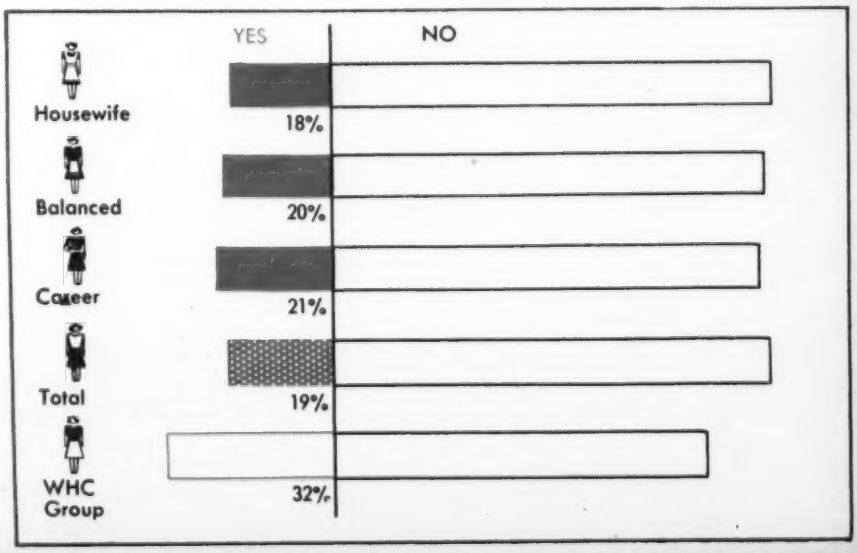
*If yes, what type will it be?*

| | NATIONAL SAMPLE | | |
|---|---|---|---|
| | *Housewife* | *Balanced* | *Career* |
| Automatic | 14% | 18% | 12% |
| Wringer | 10 | 7 | 4 |
| Spinner | 4 | 5 | 5 |
| Don't know | 7 | 8 | 7 |
| Total who will buy: | 35 | 38 | 28 |

*Do you think a dishwashing machine would relieve you of enough work to be worth the cost?*




*Would you be interested in having an electric clothes dryer?*



"It would be wonderful if ranges could be equipped with a device to carry off or neutralize smoke and odors. I find the greasy smoke from meats especially annoying."

"The average range is too small for cooking for a big family. They should have at least six burners and no crowding."

"I want an oven up higher. I hate to stand on my head to look into it."

"Have burner tops constructed so they do not collect dirt and grease, and parts easily removed for cleaning."

"Tops should be easier to clean. If something runs over and burns on stove it takes forever to clean."

"I would like a large range top to work on and a stain-proof . . . one would be a big help when one cans a lot."

"I could surely use two ovens. When we have a roast or turkey, I very often want biscuits or pie or baked squash."

### What women want in a washing machine

35 per cent of the women questioned are planning to buy a washing machine after the war and their answers to the question "What are the features you will look for in a new washer?" indicate that the women questioned know what they want a washing machine to do for them and what they will be looking for in this appliance as soon as they are made available.

Above everything else wanted in connection with a washing machine is one that is completely automatic in action. In fact, more women made comments on the washing machine than any of the other appliances, and numerically speaking this was their most impressive remark: A large number amplified it by saying, "I want a Bendix;" or "like a Bendix."

The other things most wanted in a washer are the following:

One that will wash clothes clean.

A wringer that wrings dry.

Minimum wear and tear on clothes — no tearing of clothes or pulling off buttons.

Speedier and more economical operation.

Safety devices.

One easy to keep clean.

Square in shape.

Better drainage system — also quicker to fill.

Other suggestions less frequently made but still conspicuous were:

Some way to keep water at even temperature.

Machine that is noiseless, vibrates less.

One that will wash heavy pieces.

Double compartment (two tubs), one for light and one for dark clothes.

One that will partially dry wash.

Gadget that will starch clothes.

Some of the verbatim comments regarding washing machines are worth reading:

"Would like one square so that it fits easily into corner of rooms."

"Top of washer should be absolutely flat and of table height so that machine can serve a double purpose if occupying valuable kitchen space."

"I want it to save my having to lift so much dead weight."

"Square, modernistic, streamlined, and a fool-proof wringer which cannot clog or tangle."

"I want something I can leave and go about my other work. Also one safe to have children around."

"I expect a washer to do about everything: wash, rinse, damp dry, clean itself, and please leave the buttons on clothes."

"Wash undies as well as heavy work clothes without hurting one and leaving dirt on the other. Have an automatic gadget so you can adjust the time depending on the articles to be washed."

### About the dish-washing machine

Only 12 per cent of the women think a dish washing machine would relieve them of enough work to be worth the cost. Many thought they were not worth while for a small family, were too much bother to use, and that dish washing could be done quicker by hand. 31 per cent of the women who do not think them worth their cost admitted they knew nothing about them. 11 per cent were under the impression that they broke too many dishes, that they did not do the hardest part of washing dishes — the pots and pans. 9 per cent said they did not get the dishes clean. 4 per cent thought they were not sufficiently developed.

This surely indicates the need of a constant and constructive educational program to show women the merits of the modern dish-washer, and to point out to her the safety features, the sanitary features and the cleanliness of automatically washed dishes.

### Conclusion

If you note carefully the answers quoted, you will see that over and over again, no matter what appliance the women were commenting on, they repeated "easy to keep clean" as being one of the first requirements of a good appliance. Porcelain enamel finishes can do a lot to fulfill these known wants of women.

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*This study has shown that women are willing and eager to discuss the problems relating to the use of household appliances. There are definite possibilities for product improvement in taking the consumer into the manufacturer's confidence.*

*This study was designed to cover one avenue of consumer research — from the viewpoint of the psychologist. While it was impossible to cover the complete research in two brief articles in* finish, *Ada Bessie Swann has presented the highlights and a picture of how women differ in their attitudes towards household appliances.*

*If this* finish *feature offers suggestions for improving products or for selling them, it will have not only served its purpose but will have also aided in accomplishing the objective of the survey sponsors.*

# The Birmingham Story

## a story of "quick change" war production in the "deep south"

*By A. B. Kimpel* • ENGINEER, FERRO ENAMEL CORPORATION, CLEVELAND, OHIO

BACK in the spring of '42, in the days when the nation was feverishly preparing for "defense," an idea was born that has since grown beyond anyone's expectations. That idea was to build and operate a small "emergency plant in the deep south" to produce incendiaries — specifically, *thermit*, an important ingredient in several types of munitions.

Two reasons prompted this move, originally suggested by officials of our company — and quickly concurred in by Procurement Officers of the Chemical Warfare Service Branch, U.S. Army. First, such a plant would provide a vitally important source of supply in the event anything should happen to our plants producing thermit in Modesto, California, and in Cleveland. Secondly, by locating this plant close to raw materials and a good labor market in reasonable proximity to the big Southern Arsenals, faster deliveries could be made — and without adding to the strain on railroads in more congested areas of the country.

So in June of 1942, contracts were signed for the erection and equipping of this plant. The site chosen was Birmingham, Alabama, close to the huge scrap piles of the steel companies (iron scale being the principal raw material used in the production of thermit).

### Plant converted to smoke-mix powders

Starting from scratch, our engineers and production men built the plant and had it operating in less than four and one-half months. Then, almost overnight, within sixty days of its completion, they converted it to the production of *smoke-mix* powders to meet an "immediate" request of the Chemical Warfare Service.

Those first six months were trying, equipment was difficult to find, and more difficult to get installed. Local suppliers and contractors were ready and willing to help but the right ones had to be picked at the start to insure completion on schedule. Approved sources of local raw materials also had to be established, samples approved, and stocks were moving in while machinery was being installed. Raw materials on hand for Thermit were warehoused to make room for Smoke-Mix chemicals, but Smoke-Mix powders were shipped out on schedule. Employees used on construction were swung over to production and today most of the original group who installed the plant are still on their jobs.

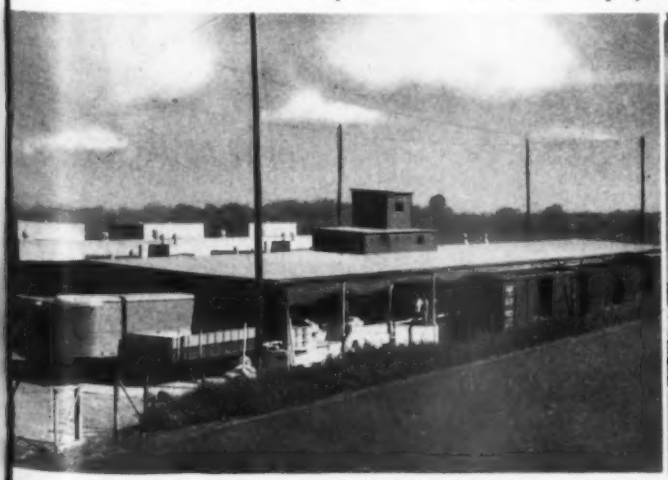
F. S. (Jim) Markert, Vice-President in Charge of Manufacturing Operations, commuted so frequently between Birmingham and Cleveland during this period that the company tried to buy him a "monthly commutor's ticket." He says that at one time or another he believes most everyone in Birmingham pitched in to help. At one stage of the installation one contractor commented "Why are you Yankees always in such a hurry; this war is going to last a long time."

### Second smoke-mix plant authorized

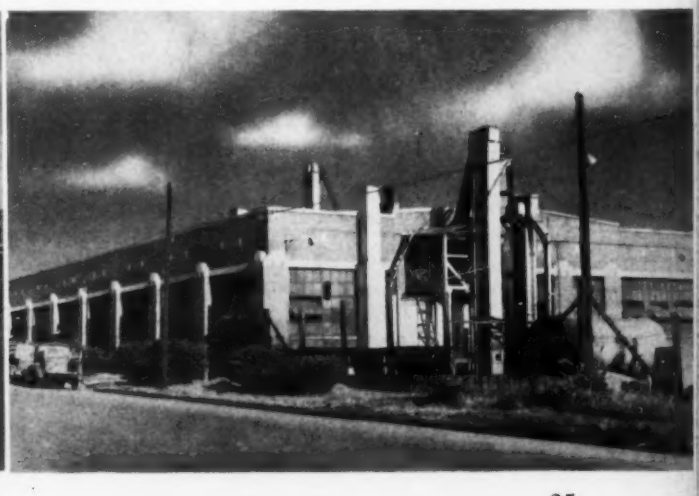
A year later, in December of '43, when the Chemical Warfare Service required still greater production of smoke-mix powders, our company was authorized to build a second and much larger plant at Birmingham — to employ three hundred and fifty people, and to be operated for the Government.

Sylvester N. Smith, our service

*Two Ferro southern war plants.*



*Plant No. 1 is to the right.*



*Roasting department for thermit production.*

*View in the "crimping" room.*

*Assembling tops for smoke pots.*

*Isolated mixing cells at plant No. 2.*

representative in the Chicago district for some time prior to the war, was in charge of the thermit plant, also managed the Smoke-Mix plant and later handled both operations. As is obvious, this job soon called for the characteristics of a "quick-change" artist.

The second new plant for producing smoke-mix powders had hardly gotten into operation, the following June, when once again "signals were changed" with little or no warning. Chemical Warfare Service needed more thermit — needed it badly and quickly. So the original Birmingham plant was immediately reconverted and CWS got their thermit.

In order to get uniform quality and standardize production from our widely separated plants, the Birmingham thermit plant was built as an exact duplicate of the thermit production facilities in Cleveland. This has made possible the requisitioning from either plant, a big help in filling orders wanted "immediately if not sooner."

### Third plant installed for loading smoke pots

In August of 1944, at the request of the Dallas Chemical Warfare Procurement District, a third plant was built in Birmingham. This plant, like the second, was to be operated for the Government. The "job" for this new plant was to assemble *smoke pots*, used in screening our troops and ships as they carry the fight to the enemy.

With manpower shortages in most other areas, and with Birmingham offering the rare combination of labor, proximity to materials, good transportation and experienced management, Birmingham was a "natural" for this plant also.

"Val" Cichowski, service representative in the East and Central Ohio, was put in charge of this third unit of the Birmingham "plant." Employing nine hundred people and operating on a three-shift basis, this unit was soon producing upwards of 6,000 smoke pots a day. Each pot, incidentally, contained enough powder to throw a concealing fog over a sizable area and burn from twenty to thirty minutes. *to Page 54* →

# Finish makes important move

## to strengthen technical service

**With justifiable pride Finish announces the association of two of the country's leading technical ceramists with our publication.**

**In the original plan outlined for the publication, a *balanced* editorial content was promised. To get the proper editorial balance we require: a strong technical section; ample plant and processing information; educational features, including surveys and merchandising data; Washington reports; and complete news coverage, both editorial and pictorial. It is our first aim that the information printed in all of these sections be authentic and accurate in every detail.**

**In order to assure careful editing of all material of a technical nature, we have procured the services of Professor A. I. Andrews, Head of the Department of Ceramic Engineering, University of Illinois, as associate technical editor, and Professor R. M. King, Department of Ceramic Engineering, The Ohio State University, as associate technical editor and editor of foreign papers. We feel exceedingly fortunate in having the guidance of two so capable technical authorities in the editing of technical data for Finish. Both have not only obtained an enviable record of accomplishment in the ceramic industry, but have proved through their past work their keen interest in the porcelain enameling field.**

**We believe all Finish readers will agree that a big step forward in service to the industry has been taken in the retaining of Professor King and Professor Andrews as associate editors.**

**The Editor.**

**Professor A. I. Andrews**—received his B.S. Degree in Chemistry at the University of Wisconsin in 1920. He remained as a Graduate Assistant in Analytical Chemistry and received his M.S. Degree in 1921.

He entered the Industrial Chemistry Department of Ohio State University in 1922, as Assistant in General Chemistry, and received his Ph.D. Degree in 1924.

After conducting Special Research Work for the Bureau of Mines and

FINISHFOTO

Dolomite Products Company, he became Professor of Ceramic Engineering at Alfred University.

In 1925 he went to the University of Illinois as Assistant Professor of Ceramic Engineering. He later became Associate Professor, and in 1933 advanced to Professor of Ceramic Engineering. In 1942 he was elevated to Head of the Department.

Professor Andrews was President of the American Society in 1939-40, and is now President of the Ceramic Educational Council.

In his industrial consulting work he has served such companies as Titanium Alloy Mfg. Co., R. & H. Chemicals Division of E. I. du Pont de Nemours & Co., A. O. Smith Corp., Harshaw Chemical Co. and Canton Stamping & Enameling Co.

He is author and co-author of more than sixty papers on enameling and other ceramic subjects. His first book, "Ceramic Tests and Calculations" (John Wiley & Sons), was written in the summer of 1928, and his book "Enamels" (Twin City Printing Company) in 1934.

**Professor R. M. King**—graduated in Chemistry (B.A. Degree) from the University of Texas in 1916. He received his M.S. Degree in Ceramics from Ohio State University in 1923.

He then became Chief Works Chemist and Superintendent at the Carbon Electrode Plant, Aluminum Company of America, Alcoa, Tennessee. Following this he was a Research Engineer at the U. S. Bureau of Mines Ceramic Station, Columbus, Ohio. He was then Refractories En-

gineer for the Lukens Steel Company, Coatesville, Pa.

In 1927 he returned to Columbus as a member of the Ceramic Department Staff at Ohio State University. His title "Professor" at O.S.U. became effective October 1, 1944.

Professor King was formerly Technical Director of the Porcelain Enamel Institute, and formerly Chairman of the Enamel Division, American Ceramic Society. He is now a member of several technical committees of the Porcelain Enamel Institute.

He has shown keen interest in enameling projects, including one of the most recent problems — a study of problems related to architectural porcelain. He is listed in "Who's Who in Engineering," and "American Men of Science."

He is the author and co-author of some fifty papers on ceramic subjects, many of them on enameling problems.

*F. H. GUTHRIE — is well known throughout the stove industry, and in enameling circles as well. He started his career as a car unloader with Westinghouse, Mansfield, in 1918, as the 35th man on the payroll. He was assistant manager at the Mansfield Vitreous plant in 1928 when he left Mansfield to join the Newark Stove Co. organization as enamel plant superintendent. "Dick" is now executive vice president at Newark Stove.*

*F. W. ROZENE — has been with the Geo. M. Clark Division of American Stove Co. at Harvey, Illinois, for 32 years. For almost 20 years of this time he has been in charge of the porcelain enameling plant. During the war he and other key men in the enamel plant organization have been concernd with the production of army field ranges, fragmentation bombs and other war products. An ardent baseball fan, "Ferd" lives in a good town to enjoy it.*

# PEOPLE YOU KNOW

*C. S. ANDERSON — is closely associnted with the appliance business in his work at New Monarch Machine & Stamping Co., Des Moines, Iowa. During peacetime he is concerned with the design and fabrication of a wide range of parts for appliance producers. During the war, New Monarch has been 100% on war production, ranging from bomb finns and powder cases to army camp stoves. Clarence is New Monarch's executive vice president.*

*P. E. GERDES — ceramic engineering graduate from O.S.U. Paul was with Ferro for three years on research and quality control. From 1936 to 1940 he was with Cleveland-Tennessee Enamel Company on production and control, and since 1940 has been porcelain plant superintendent at the A. J. Lindemann-Hoverson Co., Milwaukee. During the war he has been supervising production of ammunition containers, tank parts and other war product components.*

BLE — With a B.S. in C.E. from the U. of I., "Bill" started his career at Seeger Refrigerator on control. Later experience in Chicago Vit. lab and laboratory work at A. O. Smith Corp. Prior he was with Ferro Enamel Corp. on technical sales and service. '42 he joined Chemical Warfare Service and became an ad- ve officer in the Cleveland area for the Pittsburgh Division.

*C. J. ROGERS — is one of the three Rogers brothers who own the Crown Stove Works, Chicago, Illinois. (Founded in 1908.) "Charlie" is secretary and sales manager, while brothers W. F. and J. C. are president and treasurer, respectively. Normally the company manufactures gas and electric ranges. During the war the work has been on gun mounts, "pack stoves" for the army, machine shop contracts and assembly work on navy trucks.*

# { OR SHOULD KNOW } Strictly Candid

*R. L. FORAKER — has been actively connected with enameling for over 23 years. Some of Ralph's early experience was with Coonley Mfg. Co., where he learned kitchen ware enameling. He was next with Cribben & Sexton, enameling ranges; then with Ingram-Richardson Mfg. Co. where jobbing was the problem; and later with Chicago Vitreous in charge of field service on enamel frit. He is now Chicago District Manager for Pemco Corporation, Baltimore.*

*C. D. CLAWSON — Ferro Enamel vice president, is busy with 'phone and Dictaphone when in Cleveland. Much of "Dud's" early work concerned the technical phases of enameling, both with Ferro and others in the enameling industry, but in recent years he has been active in sales and executive contacts. He is credited with much valuable service to the war effort in his present capacity at Ferro.*

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# Postwar conditions

## and the architectural porcelain enamel market

**a summary of data and opinions on general business conditions and building potentials — postwar**

*By Charles P. Lohman* • SALES MANAGER, PEMCO CORPORATION, BALTIMORE, MARYLAND

Exclusive feature finish

A great deal has been said about the higher incomes, deferred demand and accumulated purchasing power that will exist at war's end. The emphasis which has been placed on the existence of these conditions has created a rather widespread belief that American business — including our own — will enjoy overwhelming prosperity in the years ahead. While it is undeniably true that the future does hold great promise, especially for the enameling industry, no valid reason has yet been found to justify an assumption that this prosperity will be either automatic or inevitable.

### Postwar market prospects

Unless unforeseen conditions arise to change the prospect, it is safe to reason that, after the reconversion period, the enormous accumulation of demand for goods and services will create a condition of general prosperity far greater than anything we have known. But it is also safe to reason that these stimuli to prosperity will not remain forever potent. Inevitably there will come a day when war-born demands will decrease as the deferred wants and needs of the buying public are satisfied. When that day dawns, American enterprise will face the task of maintaining the demand for its goods and services at, or very near, the boom level. If it fails, the boom may boomerang. The nation will have a swollen production capacity with a shrunken demand — a condition that will cause unemployment and its attendant troubles, government interference to the point, perhaps, of virtual confiscation, and a general upheaval of our capitalistic system. Distribution and sales are, therefore, of paramount importance to our future well being.

### Reconversion

Economists seem to like the idea of dividing the years after the war into three separate periods: the reconversion period, the postwar boom and the period after the boom.

With respect to the reconversion period, it is a consensus of opinion that we will see a brief slump due to unemployment while plants change from a war to a peacetime business. However, since it is inconceivable that the government will continue to control and allocate either labor or materials once they become available for civilian production, or to retain the power to dictate what business can or cannot do in the way of producing peacetime goods and services, it is anticipated that this slump will be of short duration with a consequent minimum of depression and unemployment. As far as our own industry is concerned, it does not seem likely that this reconversion period will affect our pocketbooks to any great extent.

### Postwar boom

After reconversion is completed a boom period is expected to follow, forced, in large part, by the enormous accumulation of deferred demand which has built up since war began. It may last anywhere from six months to three years while business strives to supply the demand for peacetime products. During this period a wild scramble may be expected while individual companies jockey for competitive position in their respective markets and do everything in their power to "make hay while the sun shines."

Of course, there are a few who do not view this period so optimistically. These are of the opinion that, if civilian production is not resumed quickly enough, some of the accumulated wartime savings may have to be spent on living essentials such as food, shelter and clothing while workers wait for peacetime jobs. Should this happen it might, so it is claimed, result in a shrinkage of the immediate postwar market for durable goods. These persons also hold to the opinion that unless the durable goods industry — of which the porcelain enamel industry is a part — is ready for instant action, the opportunities this postwar boom holds might be evaporated by hot wartime savings that are only waiting for quick spending on the first thing that becomes available. This might mean that the postwar boom, insofar as our industry is concerned, might not be as great as we anticipate. Fortunately, the group holding this opinion seems to be in the minority. While it would take the seventh son of a seventh son to foretell the size of the boom, our position is that none of the conditions which might affect it will be so nearly insoluble as to work against an early capture of a far better than normal market for all goods produced by the enamel industry.

### Period after the boom

It is generally agreed that the future of private enterprise is predicated on its ability to develop and maintain a self-sustaining economy—

an economy, in other words, that will consume all the goods and services which can be produced by the maximum number of our working population. Our basic objective, therefore, is jobs, for jobs mean purchasing power and purchasing power, coupled with the desire to buy, is the lifeblood of business. Since the total available labor force of the nation will be greatly increased at war's end, it is apparent that this primary objective cannot be solved by simply planning on the return of business to its prewar level.

That sustained optimum employment is truly a basic postwar objective is apparent when the prewar and wartime labor movement is considered. Out of the business depression and unemployment of the thirties, there arose the thin but insistent plea of labor for economic security. To many at the time, Keynes's doctrine of government spending seemed to provide the most satisfactory answer. This doctrine, however, menaced one of the fundamental principles on which this nation was founded: economic freedom, the right to create and enjoy physical wealth. During these war years labor's plea has grown in volume and changed in tone. It is now clear, to all those who care to hear, that it has become a demand — a demand that will become increasingly insistent as time goes on. Private enterprise must satisfy this demand for economic security, or the government will. It is not pessimism but realism that leads to the conclusion that, if the government, as advocated by Keynes, supplies this security through jobs paid for by deficit financing, and control of business and profits, our free enterprise system may be taxed and regulated to death.

Present plans for Federal made-work programs are designed primarily to cushion the shock of transition from a war to a peacetime economy. They will also ease the strain of future short-time depressions. Nothing has been said or written to date which leads to the impression that the government contemplates usurping the role of private enterprise as the major employer in the country. Government officials and agencies both seem united in the belief that, while opportunity to work must be provided for all, public employment cannot do the job alone and that, in consequence, private enterprise must be allowed a maximum of free play. Since there will be more people available for work after the war than before war began, it means that, in order to satisfy labor's demand for jobs and the security that goes with jobs, American business must produce more goods and services, and sell them to more people in the future than ever before. Failure to achieve a balance between production and consumption will result in unemployment and, consequently, in labor's loss of economic security. The price of economic freedom for business is economic security for labor.

**Editor's Note:**

**This first of a series of three articles by Mr. Lohman offers a background of building potentials based on survey results and authoritative information sources. It should be of particular interest to those primarily interested in the architectural porcelain enameling division of our industry, and to all those who will serve this division.**

**In addition, it summarizes important opinions which will be of equal interest to all who have a product to sell to American homes or in the building and construction field.**

**The second article by Mr. Lohman, to appear in a subsequent issue, covers "The Characteristics of the Postwar Building Construction Market," and delves into the problems facing the development of architectural porcelain enamel as a building material.**

**In the third article of the series, "Promoting Architectural Porcelain Enamel Requires Joint Action," Mr. Lohman offers specific suggestions for expanding the market for architectural porcelain enamel.**

Neither the reconversion period nor the boom period that will follow should present difficulties which American enterprise, including our own, cannot surmount with ease as compared with the difficulties of this post-boom period. Inasmuch as it will determine in large degree the steady growth or gradual decline of free enterprise in this country, it is this period with which we are principally concerned.

### Postwar productive capacity

Maximum employment depends upon solving the closely related problems of production and consumption. With respect to the former, it is important to note that the available labor supply of this country is increasing at the rate of 600,000 every year. Obviously this growth of our labor force will greatly increase the productive capacity of the nation. Productive capacity, however, is the total number of persons willing to work, times the output per person. What is not so obvious is that this output, per man hour of employment, is being continually accelerated at the rate of 2½% compounded each year. There are no apparent indications that this rate of increase will change. Assuming it is correct, it means that, in order to achieve a condition of sustained optimum employment, production after the war must be held at a very much higher level than before war began.

The problem of consumption is equally important to the future growth of free enterprise. It is a well known axiom that all the goods and services produced (the gross national product) must be purchased if the national economy is to be self-sustaining. Otherwise, full employment will be impossible. If the gross national product is increased after the war, by means of more persons producing at a higher rate than ever before, the total purchasing power of the nation will also increase. But, although production creates its own purchasing power, it does not automatically create a corresponding demand. Hence, it would seem that, in the interest of self-preservation, private enterprise must give primary consideration now to the problem of creating an effective demand for its postwar goods and services to the extent that consumption will keep pace with production.

That these are both large problems is beyond dispute. Of the two, however, the problem of consumption —

getting the people to buy all the goods and services that can be produced by the steadily increasing labor force of the nation — is by far the more difficult. Yet, if we admit the existence of the problem, we are already half way to its solution. Business in general, and the enamel industry in particular, has demonstrated time and time again the ability to solve difficult problems. War has kept us in excellent practice. Selling more porcelain enamel in the future than we ever sold before poses a new problem more difficult, perhaps, in some respects than others we have had to solve, but still just another problem. One thing is certain: to lack confidence in our ability to solve this problem of selling is to invite disaster in the form of a gradual disintegration of markets held before the war, and the permanent loss of any new ones that might develop after war's end. With our own industry, as with all private enterprise, the imagination, ingenuity and daring that have made our free enterprise system the vital factor it has been in the development of the country, will not fail. With complete awareness of the fact that business as usual, in the prewar meaning of the expression, will not develop postwar markets to their necessary extent, it is safe to predict that the opportunities the future holds will be realized in full.

### Market studies show great demand

Much has been said about postwar market potentials. No expert in the field of economics denies they exist and very few, indeed, believe our present system incapable of developing them to their limit. The building construction market holds some of the greatest possibilities for growth and profit. An almost cursory reading of predictions by various government and private agencies, large corporations and the country's foremost economists gives even the most skeptical a foundation for sober faith in the opportunities this building construction market holds for architectural porcelain enamel. A brief review of some of the more widely known and extensive studies might illustrate the reason for this faith.

### Chamber of Commerce survey

The third progress report of a Consumer's Survey, made by the U. S. Chamber of Commerce to measure postwar buying intent for the six months immediately after the war, indicates that the government's policy of restricting new home construction has created a steadily increasing demand which is far in excess of normal. This survey also shows that about 40% of American home owners have plans for some sort of improvements or repairs for this same period. To this estimate of new urban homes, and home improvements, there should be added the construction work which American farmers are planning to do. The survey represents current consumer intent only and, hence, cannot be considered as a hard-and-fast prediction. Conditions beyond the range of today's vision may alter these plans of home and farm owners but, assuming adverse circumstances do not arise to change them, the Chamber of Commerce Survey indicates that there will be an immediate postwar building construction demand in new homes, and home and farm improvements, amounting to about $14 billion.

### Fortune Magazine survey

The Fortune Magazine Survey shows that 4,700,000 American city dwellers are promising to buy or build themselves a home within a few years after war's end. Compared with the previous largest recorded number of homes built in any year — 937,000 in 1925 — it represents an astounding construction demand that would take at least five years to satisfy. To these city dwellers should be added the farmers who also plan to build new homes, and the families who are going to remodel their old homes. Combined, this represents a total of 7,067,666* families who will build or remodel within a few years after the war. (*These figures should not be confused with those of the Chamber of Commerce Survey which were based on the buying intent for the first six months period immediately following war's end.) If we accept the estimate of the building construction authorities that their industry can build and remodel a million homes a year after the war, and if just $50 worth of architectural porcelain enamel should find its way into each of these homes, the industry will do a business of $50 million a year for at least seven years after the end of the war.

### Study by the Committee of Economic Development

This independent, non-profit corporation, which is financed entirely by contributions from individual businesses, published a study which indicates that, if available postwar manpower is employed on a 1940 hours-of-work basis, the country two years hence will be able to produce $142 billion of goods and services at 1940 price levels as compared with an output of $97 billion during 1940; a physical increase of 46%. For its estimate of the size of the nation's market in 1946 (an arbitrary date for war's end with reconversion completed) the C.E.D. presents a hypothetical projection of expenditures by commodity groups based on past relationship to the gross national product which indicates the magnitude of increase of the specific types of products listed in the study. It assumes the achievement of a high level of total production but, as is necessarily the case in an estimate of this sort, it makes no allowance for factors which might create distortion in some instances. The C.E.D. study of the building construction market's share of this postwar increase, expressed in units of a million dollars, is shown in Table I.

TABLE I

| | 1940 | 1946 | % Incr. Over 1940 |
|---|---|---|---|
| Residential | 2,323 | 5,660 | 144 |
| Non-residential | 2,198 | 5,000 | 127 |
| TOTAL | 4,521 | 10,660 | 136 |

The figures in Table I were derived from a straight mathematical projection based on the relationship between the private construction industry and the gross national output for the period 1929-1941. Their accuracy will be conditioned by the

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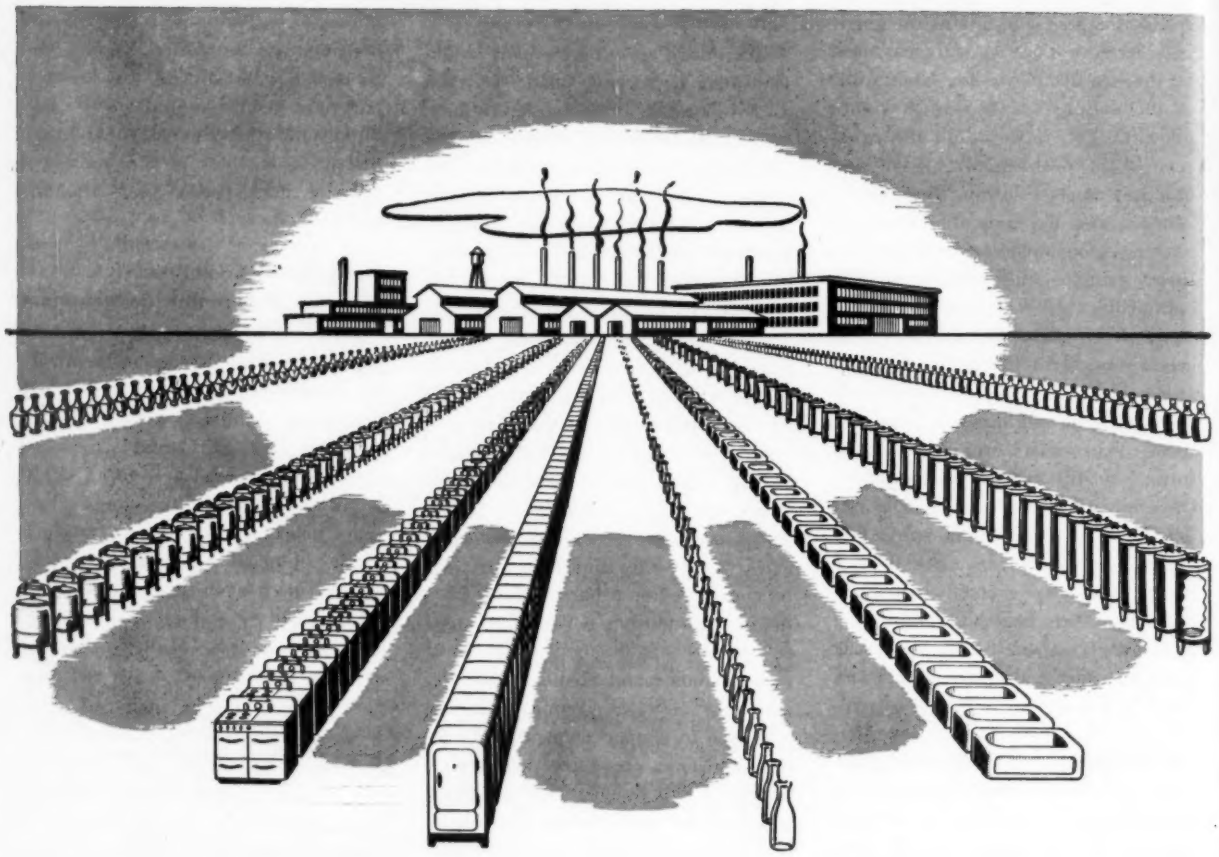

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The best ceramic supplies are important in production . . . . but they can never be a magic cure-all for ceramic production troubles. There is no harm in wishing, but there is little hope of finding an Aladdin's lamp to make such wishes come true. Remember this whenever you buy frit, chemicals and ceramic colors . . . . . put all the superlatives, the sales talk and the magic claims on one side of the scale, and weigh them against this simple statement . . . . . *"We guarantee O. Hommel Co., materials* to perform faithfully in your plant and to do everything you, as a practical ceramist, can expect good materials to do." This is a guarantee that has never been changed since the first Hommel Bronze Powder and Ceramic Colors were made 54 years ago.

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# NEWS

### New enameling superintendent at GP&F.

Ivan Schroll, formerly in the enameling department at Benjamin Electric Mfg. Co., is now enameling superintendent at Geuder, Paeschke & Frey Company, Milwaukee, Wis. Prior to his connection at Benjamin, Mr. Schroll had been connected with Norge and Round Oak Company.

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E. C. Holt, a member of American Stove Company's sales division, is now operating in his home state — Texas. Holt was formerly located in the Cincinnati territory.

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It is reported that G. A. Schwarz is now assistant director of Surplus Property Disposal with the Reconstruction Finance Corporation.

"Gus" was formerly with Clyde Porcelain Steel Corporation, and during the war has held a position in the Office of the Quartermaster General in Washington, D.C.

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### Wilfred Clay at R&M Stove

Wilfred Clay, who was formerly associated with the Bureau of Standards, Enameled Metals Section, has recently taken a position with Roberts & Mander Stove Company, Hatboro, Pa., as ceramic engineer in charge of the development and maintenance of controls for their enameling department. Clay is a ceramic engineering graduate from Alfred University.

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### W. C. Coleman celebrates 75th birthday

On the occasion of the 75th birthday of W. C. Coleman, president of The Coleman Company, Inc., Wichita, Kansas, manufacturers of lighting and heating appliances, the company issued an attractive special issue of the "Coleman Victory News" giving an interesting account of the company's activities.

The method of handling is in the form of a "report to the president" by the various officers and divisions of the company. Included also is a "report from our service men and women," which presents photographs of and references to many of the former company employees now in the armed services.

*Finish* joins the friends of the Coleman Company in wishing their president many more happy birthdays.

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Congratulations to Lt. Col. P. M. (Port) Wheeler, Jr. The new rank was indicated in the return address on a recent letter received by your editor from the former Major.

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### Czechoslovakian enameling plant in operation

Word comes to *finish* that the "Sphinx" enameling plant in Neschwitz, Czechoslovakia, said to be the largest European factory producing enameled kitchenware, is in operation. Paul Huppert, now in charge of enameling activities at Lisk Mfg. Co., Canandaigua, New York, was works manager at "Sphinx" for 12 years (before "Munich").

The former enameling superintendent under Dr. Huppert sent word by cable to a relative in this country. This is the first that had been heard from him during the war.

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### Mullins offers engineering scholarships

Sons of employees of Mullins Mfg. Corporation are to be given preference in the selection of students for Mullins engineering scholarships to the University of Cincinnati. Under the plan recently announced by President George E. Whitlock, four engineering educations will be provided yearly by the corporation for selected high school students, beginning next spring. Whenever possible, it was stated, two of the four winners will be sons of Mullins workers.

Under the Mullins Scholarship plan, tuition, books, board and room for the first year's course at the University will be paid. After that, under a cooperative plan at the University, students will alternate school sessions of eight weeks with eight-week work sessions, during which they will combine theory with practice and earn

money for schooling at the same time. Mullins will employ the scholarship students during their work periods, sending them through a complete training routine during the five year university course.

The University has had a cooperative training program for engineering since 1906, but Mullins believes it is the first corporation to establish a scholarship program that provides work in the sponsor's plant to the ultimate end of the student making a career there.

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The National Electric Washer Co., and F. L. Jacobs Co., both of Detroit, have been elected to active membership in the American Washer and Ironer Manufacturers' Association, according to announcement by Allyn H. Noelke, executive secretary.

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### Tappan to build new plant at Murray, Kentucky

FINISHFOTO

*Superintendent Wm. Mabee*

Stockholders of the Tappan Stove Company have voted to authorize the issuance of 25,250 additional shares of stock to finance the firm's post-war expansion program.

It was announced that part of the funds secured from the sale of additional stock will be utilized to purchase new equipment for increased production at Mansfield, while the balance will be used to construct a new manufacturing plant in Murray, Ky., which may be operated by a newly formed corporation.

The new company will be managed by Robert M. Lamb, Tappan's plant superintendent, and William R. Mabee, assistant plant superintendent, will replace Lamb in Mansfield. James S. LeMunyon will become assistant plant superintendent and in charge of the company's Portsmouth plant.

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### Gas stoves now certificate-free

Gas heating and gas cooking stoves were made certificate-free as of August 1, 1945. According to the Consumer Durables Rationing Branch, OPA, this action was made possible by the substantial increase of the allocation of materials for the third quarter. However, all oil heating and cooking stoves, including oil and gas combination stoves, will be kept under strict rationing control because of the fuel oil shortage which is expected to continue until the end of the war with Japan.

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### Pemco develops new slogan for porcelain enameled products

The Pemco Corporation has just released for general use by the porcelain enamel industry a new slogan: "*The Dirt Comes Off — But The FINISH REMAINS*". Pemco has placed no restrictions to its use except that it should be used only in connection with porcelain enameled products. It is felt by the company that the new slogan not only embodies the good features of "As easy to clean as a china dish," the permanency of "The lifetime finish," as well as the descriptive phrase "Glass fused to metal," but does it in a way that is easier to remember. They hope that the slogan will find ready acceptance in the industry.

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### No wheelbarrow for Hutchinson

Many soldiers have ended up between the handles of a wheelbarrow after volunteering when their Captain asked if they would like to drive the General's automobile. But not Neil (Squeek) Hutchinson, formerly a dipper in the ground coat department at Clyde Porcelain Steel Corporation.

When Neil's commanding officer asked him if he wanted to drive the General's car, he replied in the affirmative — and on Thanksgiving Day, 1942, he slid behind the wheel of Maj. Gen. Robert S. Beightler's jeep on a South Pacific island. He handled the job for 2½ years and had many thrilling experiences prior to his honorable discharge on points June 6 of this year. He is now back at work at the Clyde plant.

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### Fennessy returns to O. Hommel organization

O. Hommel Company of Pittsburgh reports that B. F. (Bart) Fennessy is again associated with the company as sales representative, with headquarters in Chicago. His territory will include Indiana, Wisconsin, Minnesota, Illinois and part of Michigan.

Bart is returning to the O. Hommel Company after a long absence. He left Hommel in 1925 to represent Harshaw in Chicago, and from there went to the Certain-Teed Products Co. as head of their Industrial Division. At this position he became familiar with the pottery industry.

As a member of the Chicago District Enamelers Club, Bart has always shown a strong interest in the porcelain enameling section of the ceramic industry, and is well known to mid-west enamelers.

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Captain Max W. Hoelscher, formerly department foreman in the porcelain enameling plant of Seeger Refrigerator Company, St. Paul, Minn.

(now Seeger-Sunbeam Corporation), recently was awarded the Bronze Star for meritorious service by Brigadier General L. P. Whitten, Commanding General of the Air Service Command in Italy.

### New commercial all-cargo airline

Formation of the first commercial all-cargo airline set up to operate on a non-schedule basis to any airport in the United States was announced recently by Air Cargo Transport Corporation at its main office in the Empire State Building, New York, N.Y.

This line is in operation with a fleet of especially designed twin-engined transports, and because cargo will be carried in each instance on a charter basis, delivery is promised on a time schedule as set forth in the agreement between shippers and the company.

H. Roy Penzell is president and treasurer of ACT, and William L. Rome will act as secretary and general traffic manager.

### A.G.A. domestic range committee plans "CP" promotion for dealers

A complete "CP" dealer promotional program designed to assist dealers in selling a greater volume of higher grade gas ranges postwar was put into final form by the Interim Committee of A.G.A. Domestic Range Committee, held in New York recently. Consultants to the group were representatives of Hardware, Department Stores, Furniture, Appliance and L-P Gas Dealers.

In addition to a complete coordinated sales plan, basic recommendations for action on the part of manufacturers and gas utilities included regional dealer meetings, revival of the "CP" Ranger Club and the "CP" Ranger News. More than 8,500 gas range salesmen are said to have participated for prizes in the "CP" Ranger Club prewar.

A complete sales training course designed to train new salesmen and to bring older salesmen up-to-date on the latest sales techniques will be available. Each manufacturer will augment the sales training programs with his own sales and product stories.

### American Stove founder dies

Louis Stockstrom, 86, Chairman of the Board of Directors of American Stove company and a well known figure in the stove manufacturing business, died July 5 at his home in St. Louis, Mo. He was the last survivor of the original founders of his company.

Mr. Stockstrom was born in Oldenburg, Germany, November 10, 1858. He received his early schooling there and also served an apprenticeship to learn the machinist trade. He came to America in 1880.

He began his career as a stove manufacturer in America in 1882 with the Quick Meal Stove Company, which eventually became the American Stove Company. The Company was incorporated in 1901 and Mr. Stockstrom was named a director as well as manager of the St. Louis division.

Mr. Stockstrom was elected president of American Stove Company in 1927, and directed the affairs of the company until 1938 when he was succeeded by his son, Arthur Stockstrom. When the latter became president, Mr. Stockstrom was named Chairman of the Board, the position he held at the time of his death.

It is reported that F. L. Jacobs Company, Detroit, has purchased a plant at Dowagiac, Michigan, which is being remodeled and equipped for a branch factory to manufacture washing machines.

The address for George F. Henry Enterprises (See " . . . newly formed company," August *finish)* is 341 E. Ohio Street, Chicago 11, Illinois.

### Arthur S. Watts scholarship fund established for ceramic engineers

The Ohio State University Development Fund announces the establishment of The Arthur S. Watts Scholarship Fund. It was created by the alumni of the Department of Ceramic Engineering, classes 1914 to 1941 inclusive, of The Ohio State University. Its purpose is to honor the long and meritorious service of Professor Watts as Professor and Chairman of the Department and to express appreciation of the alumni for the interest, counsel, and many kindnesses extended by him during both their college and professional careers.

Prior to the Ohio State Ceramic Alumni Dinner held during the 1942 Annual Meeting of The American Ceramic Society, the former students of Professor Watts and several friends subscribed to a fund through which their appreciation of him might be fittingly expressed. At the dinner Professor Watts was presented with a complete set of office furniture and a bound volume of testimonial letters. The balance of the money contributed, amounting to $1500.00, was then deposited with The Ohio State University Development Fund for the establishment of an Arthur S. Watts Scholarship.

Since then, Professor Watts has personally contributed $1800.00 to the fund so that the total amount is now $3300.00. The monies have been deposited in the University's Endowment Fund. The Scholarship will become operative when the principal, through the accumulation of interest and further contributions, is such that the annual interest will amount to $300.00 per year.

The Arthur S. Watts Scholarship will be awarded annually to the ceramic engineering student who is deemed most worthy and who shall

have completed his Junior year. The annual recipient of the Scholarship will be chosen by a committee consisting of the Faculty of the Department of Ceramic Engineering, the Dean of the College of Engineering, and the Chairmen of the Departments of Metallurgy and Mineralogy. The worthiness of the student will be based upon scholarship, financial need, aptitude, and other qualities that might predict a successful career as a Ceramic Engineer.

The Scholarship Fund is now being carried as a project of the Ohio State University Development Fund and as such will be advertised annually by them. The alumni of the Ceramic Department, and others interested, are encouraged to further contributions so that the Scholarship will be available at an early date. As additional units of $300.00 annual interest become available, additional Arthur S. Watts Scholarships will be established, the report states.

## Refrigerator production starts at Frigidaire

*General Manager Godfrey admiring the first household refrigerator manufactured by Frigidaire since April 30, 1942, with Delbert Neal of Dept. 228, Plant No. 2, one of the men who built it, and Shirley K. Krueger, eleven-year old daughter of John W. Krueger, general superintendent of Plant No. 2.*

The first household refrigerator manufactured by the Frigidaire Division, General Motors Corporation, since April 30, 1942, was completed at the Moraine City plant on July 25th. It headed a parade of over 50,000 refrigerators that the War Production Board has authorized Frigidaire to build during the third quarter of 1945.

Even though conversion for regular line production has not been completed, actual production is under way. The completion of the first Frigidaire climaxed a period of intensive effort by Frigidaire factory supervisors and workers who performed the gigantic task of reconverting part of Frigidaire's large plant from the building of materials for war to the production of peacetime products in record time.

According to General Manager Edward R. Godfrey, Frigidaire is still devoting a major part of its energies to war production. The greater portion of the huge refrigerator plant is still busy with the production of propellers including those for the B-29 super-fortresses.

As announced by the War Production Board, refrigerators that will be built for some time will not be available for sale to the public but will be added to the country's frozen stockpile and released subject to WPB regulations. They will be distributed to military establishments, hospitals and other highly essential places. At this time it is not known how soon refrigerators will be sold for public consumption.

The first Frigidaire to come off the assembly line was the Model MI-7 and it will be followed by Models DI-7 and DPI-7, *the latter an all-porcelain model.*

Manufacturing facilities now being used will be only a small percentage of Frigidaire's postwar capacity, it is stated. The present single production line flanked by machinery and equipment, temporarily set in place to handle initial manufacturing, will eventually give way to four fully equipped production lines capable of turning out thousands of refrigerators every day.

General Manager Godfrey stated Frigidaire is now producing a limited number of electric ranges and commercial refrigeration equipment, and that production of additional Frigidaire products will begin as soon as materials and machinery become available and war production needs permit. These products will include Frigidaire's full line of refrigerators, electric ranges, water heaters and home freezers; also, such commercial refrigeration and air conditioning products as beverage, milk and water coolers, ice cream cabinets and air conditioners.

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## Mullins' Salem plant wins fifth "E" award

Mullins Manufacturing Corporation's Salem plant, a factory that got off to a late start when the war sent other industries booming, has won its fifth Army-Navy "E" award, to become one of the small percentage of organizations in the country to boast an "E" flag with four stars.

There was a period when it was said in Washington that little use could be made of the big Mullins presses that had been making kitchen equipment, truck bodies, washing machine tubs and fenders. Then Mullins' president, George E. Whitlock, went to Washington, taking a small, black suitcase that is said to have

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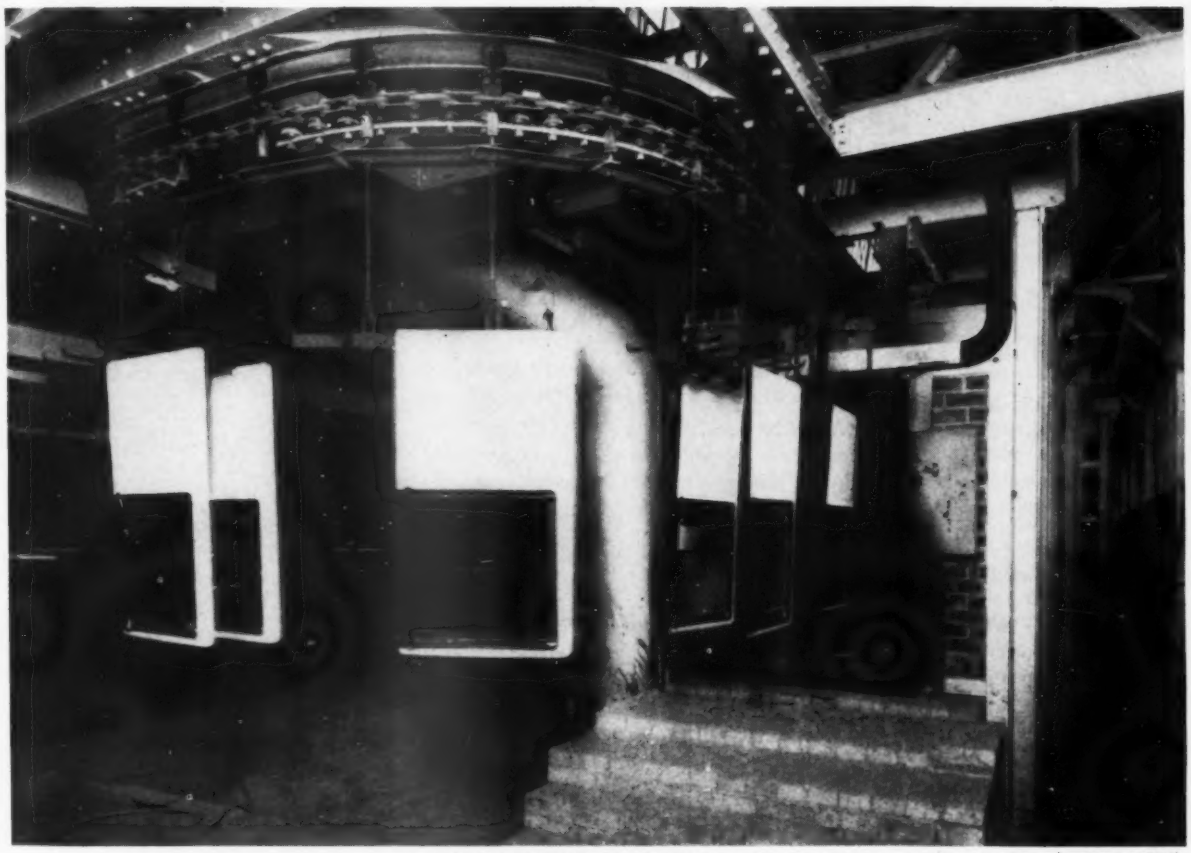
# YOU GET YEARS OF TROUBLE-FREE SERVICE FROM A BOLAND "SINGLE-FLOW"



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EVERY Boland continuous furnace is built to last. Sound design, quality materials and careful workmanship by experienced furnace builders are a part of every Boland installation.

You will get the same trouble-free service from a Boland "SINGLE FLOW," continuous furnace after years of operation. In addition, you get features obtainable in no other continuous furnace.

One of these — the patented "FLOATING ROOF" — eliminates warped furnace roofs and jammed furnace conveyors. This roof, "built like Gibraltar," minimizes heat loss and offers permanent insurance against conveyor distortion. This is just one of the reasons why Boland furnaces give continued satisfactory service.

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DESIGNERS AND BUILDERS OF CONTINUOUS AND BOX TYPE ENAMELING FURNACES

→ *from Page 38*

later become well known in ordnance circles. The suitcase contained numerous examples of vital war parts, originally made by machining, casting or forging, that could be made more quickly by the stamping method.

The Salem plant began receiving important jobs. A shell forging and machining department for making 105 mm. projectiles had been installed early in the war and to this were added facilities for making torpedo-shaped auxiliary gas tanks for fighter planes; oil pans for military vehicles; army truck cabs; watertight containers for navy ammunition; tank sand guards for the African war and fenders, radiator grills and fuel tanks for other war factories.

In March, 1943, the Army-Navy "E" was awarded to Mullins' plants in Salem and Warren. A second award was won by both plants in the fall of 1943. In the summer of 1944 each plant won its third award and the fourth "E" awards were won last spring. Now comes the fifth award.

## Westinghouse plans $11,500,000 appliance division expansion

An $11,500,000 expansion program to permit overall production 50 per cent greater than prewar of existing types of electric appliances and manufacture of new postwar products by the Mansfield, Ohio, and East Springfield, Mass., Electric Appliance Division plants of the Westinghouse Electric Corporation, was announced by A. W. Robertson, chairman.

Dollar volume in excess of $100,000,000 annually is anticipated from the increased sale of the 23 different kinds of electric appliances marketed before the war and from new products, which will include home and farm freezers and automatic clothes dryers.

"In the first full year of unrestricted appliance production, we look for dollar sales of electric appliances 138 per cent above those of 1941," the Westinghouse Chairman said, adding:

"The American home is big business, purchasing billions of dollars annually. To meet the demands of this expanding market, we hope to increase employment greatly over the prewar high. We anticipate it will be almost double at East Springfield, or between 6,000 to 7,000 compared with the highest prewar figure of 3,500. At the Mansfield plant, where prewar employment was better than 5,000, we expect, when our expanded facilities are operating at peak capacity, to employ more than 7,000 persons.

"To maintain employment at the two plants at as high a level as possible during the present reconversion period, we will use prewar factory facilities and existing machine tools whenever possible. We are now readying these plants for resumption of appliance production in the near future, while at the same time continuing a heavy schedule of war production.

"Depending on the availability of manpower and materials, we expect to be in production of several appliances by October or November. In our opinion, appliances will not become generally available before the first and second quarters of 1946, although they will appear to a limited extent previous to that time."

Of the total expansion costs, $6,500,000 will be spent at the Mansfield Works and $5,000,000 at the Springfield plant, he said.

New buildings and additions to existing buildings will cost approximately $2,153,000 at Mansfield and will provide an additional 400,000 square feet of floor space. The Springfield expenditure will be about $1,250,000 and will add 270,000 square feet of floor space.

Plant rearrangements, including the cost of machine tools, conveyors, test stands, jigs and fixtures, will be $1,300,000 at Mansfield and $1,000,000 at Springfield.

## Hospital ware for the home

Women who have taken first aid or nurses' aide courses are taking a tip from doctors and hospitals by outfitting their own homes with porcelain enameled utensils for the sick room.

For many years, porcelain enam-

*to Page 42* →

*No other wall and ceiling covering is*

# Guaranteed for life of building

## VEOS

**PORCELAIN ON STEEL**

## TILE

Veos Porcelain Tile will speak for itself in postwar planning both for new construction and remodeling . . . will set a style and a standard. Beauty with permanence has arrived! Modern *colors . . . shapes . . . sizes . . .* permit almost unlimited smart effects *never possible before.* And Veos Tile is the *only* wall covering *Guaranteed* against crazing, cracking or color-fading *for the life of the building!* Light weight allows use right over old walls and even on ceilings. Quick, trouble-free installation means little or no interruption whether in home or public building. Periodic refinishing expense is eliminated. Servicing is simply washing. More than 80,000 installations have been made.

*Write for further information*

**CLYDE PORCELAIN STEEL CORPORATION**
CLYDE, OHIO

## 10 BIG Advantages

*for Residences, Commercial and Industrial Buildings, Institutions*

- Rapid installation
- Upkeep at a minimum
- Quick, easy servicing
- Won't crack
- Won't craze
- Won't fade
- Won't loosen
- Won't warp
- Won't sag
- Guaranteed for life of building

→ *from Page 40*

eled utensils have been recognized as the most practical type of equipment in the care of the sick. The main reason for this is that the ware is smooth and non-porous and cannot readily pick up bacteria. The satiny smooth finish washes and sterilizes easily and is durable as well.

Bandages, gauze, dressings, scissors and other instruments which come in direct contact with the patient should be kept germ-free in porcelain enameled containers either in the sick room or medicine chest. There are other hospital aids made in porcelain enameled ware such as water pitchers, cups, pus basins, bed pans, etc., which aid in the care of the patient because they are so readily cleansed with soap and water.

## AW&IMA "dedicates" new quarters

The executive committee of the American Washer and Ironer Manufacturers' Association met for the first time recently in the organization's new offices in Chicago, and here is a photographic record of the occasion.

Center, front row, L. C. Upton (1900), head of the Association, and flanking him, left to right, C. G. Frantz (Apex Electrical), member of Association advisory board and finance committee; A. H. Noelke, executive secretary; Bernard J. Hank (Conlon), treasurer, member of government committee and chairman of finance committee; John M. Wicht (General Electric), member of advisory and advertising & market research committees.

Rear row, left to right: Oscar A. Lenna (Blackstone), member of executive committee; William Shaw, public relations and publicity; I. N. Merritt (Conlon), member of advertising & market research and ironer & dryer committees; Walter K. Voss (Voss Bros.), member of finance committee; W. Neal Gallagher (Automatic), member of advisory and government committees, and chairman of the advertising & market research committee; Delbert A. Rizor (Dexter), member of executive committee; A. E. Askerberg (Horton), member of executive committee and chairman of ironer & dryer committee; Richard J. Simmons (Birtman Elec.), member of industrial relations committee; Judson S. Sayre (Bendix), member of executive committee and chairman of the government committee; William S. Hammersley (1900), assistant chairman of the government committee; and Carl Huff (Bliss & Laughlin), chairman of the associates committee.

Executive board members absent when the picture was taken were Roy A. Bradt (Maytag), and J. C. Nelson (Easy).

The new association headquarters are at 111 West Washington Street, Chicago 2, Illinois, in charge of Allyn H. Noelke. The new telephone number is State 8115.

### Pressed Steel Car to manufacture household appliances

The stockholders of Pressed Steel Car Co., Inc., approved a change of corporate purpose at a special meeting held in Pittsburgh August 2. The charter was amended to authorize the corporation to manufacture and deal in household appliances, heating equipment, air conditioning and refrigerating equipment. The company plans to begin the manufacture of the new line at its Hegewisch, Chicago, Illinois plant, which has been used for the manufacture of tanks, and later to convert a part of its McKees Rocks, Pa., plant to the same purpose.

Ernest Murphy, president of the company, announced that the sales offices of the Domestic Appliance Division will be located in the American Furniture Mart, 666 North Lake Shore Drive, Chicago, with A. Rayson as sales manager. The new appliances will be marketed under the name of "Presteline" and the first product to be manufactured in the new line will be electric stoves.

Announcement has just been received that the Chicago District Plants of The Youngstown Sheet & Tube Company have been awarded the third star for their Army-Navy "E" pennant. The company's general offices and main plants are at Youngstown, Ohio.

Stanley Perry, manager of the Chicago office of Oil Devices, was stricken with a heart attack at his office, 341 E. Ohio Street, Chicago, on July 11. He is still in the hospital, but is reported to be well on the road to recovery.

### Honolulu residents want refrigerators

Although no Philco refrigerators have been manufactured for more than three years, the prospect of getting one in the post-war period sold $90,000 worth of E bonds in a recent

war bond auction held in Honolulu with the cooperation of the Hawaii war finance committee. The post-war Philco refrigerator, to be delivered when available and permitted by Government regulation, was donated by Nylen Bros. & Co., Ltd., the company's distributor there, and resulted in the most spirited bidding of the day.

### Bastian-Morley Company announces personnel changes

*Ed J. Carey*

Recent changes and additions to company personnel of Bastian-Morley Company have been announced by J. P. Morley, president. The company manufactures Crane water heaters and boilers distributed nationally by Crane Company of Chicago. According to President Morley, post-war plans include many additional items in the heating field.

*Ray J. Rodier*

Additions to the executive staff include Ed J. Carey, who has been with the company for 23 years, as vice president and general manager, and Ray J. Rodier, formerly assistant to the president, has been made vice president in charge of manufacturing. James V. Irvin is promoted to assistant to the president.

The engineering department has been augmented by two engineering specialists and four additional draftsmen, with Laurence T. Tegler returning to Bastian-Morley from the Army as chief engineer. Paul H. Mortimer is assistant to Mr. Rodier, and Frank H. Stockhausen is a "plastics engineer," a new position with the company. Mr. Stockhausen was formerly in the research laboratory at A. O. Smith Corporation, Milwaukee.

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R. V. Foraker has accepted a position as chief engineer and factory manager with the Joliet Heater Corporation Trust, Joliet, Illinois. He was formerly chief engineer of the Conlon Corporation, Cicero, Illinois. While with the Conlon Corporation he is said to have gained wide recognition in the cartridge case industry for his splendid work in connection with the development and manufacture of the 57 mm steel cartridge case.

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### Whiting resigns as chief of Furniture and Household Goods Branch

Frank S. Whiting, Chicago, Illinois, resigned his position as chief of the Furniture and Household Goods Branch of WPB, effective July 1.

Mr. Whiting, who has been affiliated with WPB on a dollar-a-year basis since March 1944, and who resigned due to pressure of personal business, has accepted designation as consultant to the director of the division. He is returning to his former position as vice president and director of the American Furniture Mart Building Co., Inc., Chicago.

### NESCO appoints metalwares distributor advisory board

*Reading from left to right: — E. P. Altemeier, sales mgr. of Metalwares Division, National Enameling and Stamping Co., Milwaukee, Wis.; J. M. Kennedy, V.P.–sales, Bigelow and Dowse Co., Boston, Mass.; Wm. Frankfurth, Pres., Frankfurth Hardware Co., Milwaukee, Wis.; I. G. Watson, Merchandise supervisor, Marshall-Wells Company, Duluth, Minn.; M. N. Brady, V.P.–sales, Nesco; Alfred J. Kieckhefer, Pres., Nesco; M. O. Newby, Secy., Stowe Hdwe. & Supply Co., Kansas City, Mo.; R. H. Etchey, V.P.–purchases, Seattle Hardware Company, Seattle, Wash.; and C. E. Nash, Pres., Nash Hardware Company, Fort Worth, Texas.*

A closer method of cooperation between distributors and the manufacturer was announced recently by M. N. Brady, vice president of the National Enameling and Stamping

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# GOOD MERCHANDISING
## includes
# GOOD PACKING

**WOODEN BOXES AND CRATES—ALL KINDS**

Plywood • Wirebound • Hinge Corner • Nailed Crates • Wood-Steel • Nailed Wood • Shop and Tote Boxes

★ Consult with our packing engineers. We offer you the services of our designing and testing laboratory without obligation.

CHICAGO MILL AND LUMBER COMPANY

111 W. Washington Street Chicago 2, Illinois

*Pioneers for Over 60 Years*

*Plants at:* Helena, Ark. • Greenville, Miss. • Tallulah, La. • Chicago, Ill. • Plymouth, N. C.

→ *from Page 43*

Company, Milwaukee, Wisconsin, at the inauguration and first meeting of their Distributor Advisory Board at the company offices.

Ten distributors from various sections of the country have agreed to serve on this Board, and at the conclusion of the three day meeting Mr. Brady voiced the opinion that it had produced many worth while ideas for the company and the distributors alike. He further stated, with competition expected to be exceptionally keen in the postwar period, the National Company desired to work closer with and know more about the problems facing their distributors in the field, therefore, the formation of the Board. It is planned to hold meetings of the Board at regular periods throughout the year. Mr. Joseph Kennedy, vice president of Bigelow & Dowse Co., Boston, was elected chairman of the Distributor Advisory Board for the current year.

### Chicago District Enamelers Club committee appointments

Waldo W. Higgins, president of the Chicago District Enamelers Club, has announced the following appointments of committee chairmen for the Club:

Program Committee: C. M. Andrews, University of Illinois.

Publicity Committee: R. L. Cook, University of Illinois.

Membership Committee: Ed. Bolin, Chicago Vitreous Enamel Product Co.

A meeting of the committee chairmen and officers of the Club is scheduled to be held on September 1, in Chicago, for the purpose of completing plans for future meetings.

### A.C.S. Chicago Section schedules meetings

A tentative schedule covering four meetings for the Chicago Section of the American Ceramic Society has been received. The dates tentatively selected are October 5, December 7, February 1 and April 5.

All meetings are to be dinner meetings, scheduled for 6:30 P.M. at the Electric Club, 20 North Wacker Drive. The Division extends an invitation to all interested visitors.

### Chicago Enamelers Club joins Chicago Technical Societies Council

The application of the Chicago District Enamelers Club for membership in the Chicago Technical Societies Council has been acted upon favorably by the Council.

This technical group is an affiliation of scientific, technical and engineering societies in Metropolitan Chicago. Its purpose is to provide a medium for cooperative action by member societies on matters of mutual interest.

With the addition of the Enamelers Club, there are now forty-two member organizations cooperating within the Council. They range from American Ceramic Society, American Chemical Society, American Foundrymen's Association and American Institute of Architects through the American Society of Refrigerating Engineers, American Society for Testing Materials and the American Welding Society to the Institute of Industrial Engineers and Executives, the Industrial Management Society and the Society for the Advancement of Management.

Officers of the Council are:

President: John F. Seifried, Ceco Steel Products Corp. (American Society of Civil Engineers)

Vice President: K. H. Hobbie, Driver-Harris Company (American Society for Metals)

Treasurer: F. B. Burns, Allied Materials Corp. (American Institute of Chemists)

Corresponding Secy.: P. S. Smith, Galvin Manufacturing Co. (Institute of Radio Engineers)

Recording Secy.: Louis A. Bain, Western Electric Co., Inc. (American Institute of Chemical Engineers)

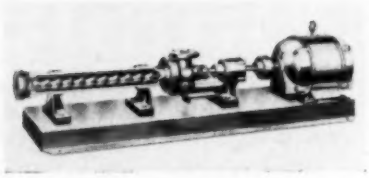
To make possible immediate cooperation of the Club, President Higgins of the Chicago District Enamelers has appointed Wm. J. Plankenhorn, club vice president, as a delegate and George Tuttle, assistant secretary-treasurer, as an alternate. An additional delegate and alternate will be selected at the time of the next regular club meeting.

*Finish* wants all the industry news relating to individuals and companies. All items should be carefully checked and signed by the sender. They will be most welcome.

**YOU'RE RIGHT! IT *IS* PORCELAIN ENAMEL**

## New Products, Equipment and Supplies

### Pumps for enamelers

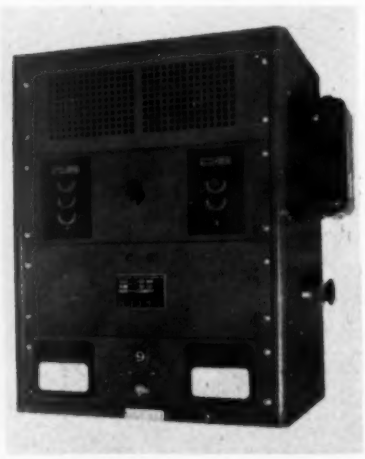


"A Turn for the Better in Positive Pumping Without Pulsation" is the title of Robbins & Myers' new 16-page book No. 20, devoted to Moyno pumps. The pumps require no pistons or valves and are recommended for anything from free-flowing liquids to non-pourable pastes. Resistance to abrasive wear and chemical reaction, low internal turbulence, uniform discharge, and long life are among the claims.

Performance characteristics as compared with other types of pumps and a list of typical materials handled are a part of this presentation of standard and special pump types and sizes, with ratings, dimensions, and weights.

Copies of Book No. 20 may be obtained from Robbins & Myers either at Springfield, Ohio, or Brantford, Ontario.

### Stabilized low voltage rectifiers



Green Electric Company announces stabilized rectifier equipment with low voltage, high current output, as a further advance over high voltage, low current rectifiers with electronic stabilization.

The unit illustrated is rated at 200 amperes, with a voltage range zero to 3 volts. It is designed to maintain any voltage selected in range to within 50 millivolts over load variation from zero to 200 amperes, and with line voltage variation of plus or minus ten per cent.

Voltage stabilization system includes motor-driven Powerstat and simple electronic pilot device. Principle is said to be widely applicable to larger or smaller rectifier units.

Descriptive data is available from Green Electric Co., 130 Cedar Street, New York City.

### How to ship your product

Modern shipping containers that enable a product to be packed in less than a minute are featured in a new booklet prepared by the Wirebound Box Manufacturers Association.

"Your Product . . . How to Ship it Safely at Lower Cost" is the title of the illustrated pamphlet which explains that modern wirebound containers save vital man hours in a shipping department, cut shipping costs and conserve space in a shipping room.

The pamphlet can be obtained by writing the Wirebound Box Manufacturers Association, P.R., 43 East Ohio Street, Chicago, 11, Illinois.

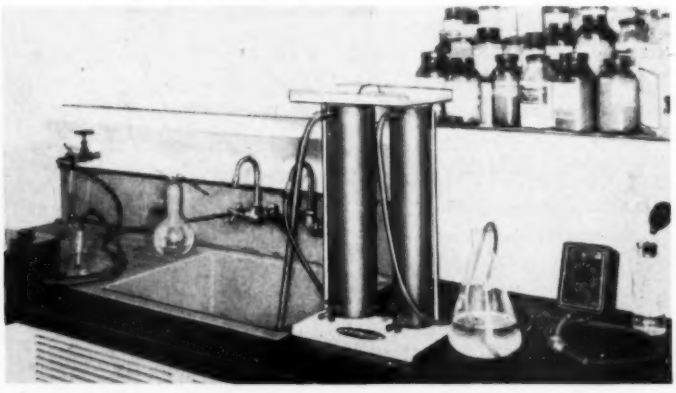
### Emergency alarm for process controls

A new safety emergency alarm feature for protecting process equipment and materials has been added by the Brown Instrument Company to its line of electronic air-operated controllers.

The new feature, known as the Brown Electronik Contact Controller, provides safety alarm principles designed to operate automatically. It also provides on-off control in addition to air control to actuate motorized valves, solenoid valves, contactor panels, signal lights, etc.

The pen position sounds the emergency alarm. A red pointer on the scale, not shown in the picture, indicates the temperature setting of the contact controller.

### De-ionized water from laboratory units



Development of compact laboratory units for producing purified water comparable to distilled water has been announced by the Illinois Water Treatment Company, Rockford, Illinois.

Large "production" de-ionizing

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# The Washington round-up

*By Wilfrid Redmond*

WPB hopes for a 400,000 ton increase in sheet and strip steel production in the fourth quarter which, added to a 700,000 ton reduction in CMP requirements as the result of allotment cuts scheduled, would provide a 1,100,000 ton "kitty" for the production of automobiles, stoves, refrigerators and other reconversion items.

It is estimated that the automobile industry will probably not use more than 600,000 tons in the fourth quarter. Estimated production of mechanical refrigerators would require not more than 66,000 tons and stoves and ranges will take about 90,000 tons.

WPB recently prepared a chart showing why it is necessary to continue to restrict the large steel-consuming industries by imposing ceilings on their production. If no restrictions were placed on non-military production, total demand for reconversion uses in the fourth quarter would be some 15 percent above prospective steel supply and 23 percent above 1937 shipments, WPB estimated. If these industries were permitted to order freely, WPB maintains, their huge buying power would give them so great a competitive advantage in the free steel market as to impose a severe handicap on countless small users.

### Refrigerators

A "secondary" ceiling production has been placed on mechanical refrigerators, limiting output to 655,000 units in the combined third and fourth quarters of 1945, and 500,000 in the first quarter of 1946. This is irrespective of whether the refrigerators are made with or without priorities assistance for the procuring of materials. Only 125,000 to 150,000 domestic mechanical refrigerators are expected to be produced in the third quarter, however, even with priorities assistance. The budget of materials set aside for the manufacture with priorities assistance of the 265,000 domestic mechanical refrigerators in the third quarter has now been assigned. All of the refrigerators produced in the third quarter will become part of the frozen stockpile and will not be available for retail sale. The stockpile is now at 20,000 units. As soon as production meets the pent-up demand for refrigerators by hospitals, blood banks, and by military installations all over the world, the distribution control will be relaxed. Applications for priorities assistance amounting to $7,000,000 have been approved for tools, equipment and construction to produce domestic mechanical refrigerators for the reconversion demand.

### Ranges

It is estimated that approximately 45,000 domestic electric ranges will be manufactured in the third quarter, 35,000 of these units with priorities assistance. The production ceiling in the fourth quarter has been established at 60,000 units. These ranges should appear on the market as they are produced, beginning in very limited quantities in the third quarter. A statement of necessity is required of the civilian purchaser.

### Reconversion pricing program

Manufacturers of ranges, mechanical refrigerators, washing machines, radios and other appliances are covered by a reconversion pricing program recently set up by OPA.

Three orders issued by OPA divide manufacturers into three classes: those with annual sales (excluding war contracts) of more than $200,000; (2) those with sales between $50,000 and $200,000 and (3) those with total sales less than $50,000.

A reconverting manufacturer with sales of more than $200,000 per year may receive an adjustment if he shows that his ceiling price for a product of which he is a reconverting manufacturer does not cover his 1941 cost for the product plus an adjustment to reflect subsequent legal increases in materials prices and in his basic wage rate schedules of factory workers. Where that is the case he may add to his 1941 cost, adjusted as just described, an industry profit factor specified by OPA. This profit factor will equal one-half of the average percentage margin of profit over total cost for the industry or industry group in the peacetime period of 1936-39.

This is an interim pricing action which is set up to aid the manufacturer until such time as industry wide profit factors can be established. These profit factors have already been announced for several industries including small electrical appliances for which the profit factor is 4.9.

### The "in line" ceiling price

If a stove manufacturer fails to apply for a ceiling price where he is required to do so, OPA will establish an "in line" ceiling price, the agency recently announced.

The price so established will be retroactive to the date of first sale of any stove affected. The ruling is effective Aug. 14. When OPA disapproves a manufacturer's proposed price, additional information will be requested on cost. If the manufacturer withholds the information, or if he makes sales at the proposed price regardless of the disapproval, OPA will set an "in line" price. This ceiling price will be retroactive to the date of the first sale.

### Washing Machines.

Programmed production for washing machines has been established at 350,000 in the third quarter, but actually only about 50,000 are expected to be made because of component procurement difficulties. In the last quarter, some 500,000 washers may be made. Distribution of washers will not be rationed.

### Table tops

Order L-13-b which restricts the use of steel in the manufacture of furniture and fixtures, has been amended by WPB to permit a manufacturer to use up to 25 percent annually of the amount of steel he used during the base period from July 1,

1940 to June 30, 1941.

This order, which governs the manufacture of table tops, previously permitted the manufacturer to make up to $50,000 of production a quarter over and above preferred orders. The new amendment permits the manufacturer 6¼ percent per quarter of the steel he used in his base period without authorization. However, he does not receive priorities assistance for this production, so the revision merely gives him a hunting license. About 2,200,000 tons of sheet steel will be available in the fourth quarter which should be sufficient to take care of fourth quarter civilian needs. If the manufacturer had no base period operation, he may apply to WPB for an "in line" base allotment of steel under PR 25, the spot authorization plan. Also, the manufacturer who wants to use more than the 25 percent of his base period steel, may apply to WPB under the spot authorization plan, for an additional allocation.

### Enamel Ware

About $6,000,000 worth of enamel ware will be produced with priorities assistance in the third quarter, a substantial quantity of which will go to the military. Additional production without WPB priority assistance is expected to be negligible.

### Bathtubs

Production of cast iron bathtubs is expected to reach 80,000 in the third quarter. However, shipments will be limited by lack of lumber and strapping. The industry expects to get into production of steel tubs in the third quarter.

### Food Preparation Equipment.

Commercial or heavy duty equipment available subject to delivery delays of varying degree. Supply will increase as materials become available.

Although the automobile and other large steel consuming industries have recommended that CMP be discontinued at the end of the third quarter, WPB has definitely decided to extend its operation throughout the fourth quarter.

### Porcelain Enameled Products.

The value of shipments of porcelain enameled products for June amounted to $3,195,856 as compared with $3,178,104 for May, the Department of Commerce reported. Shipments increased in signs, stove parts, and reflectors, including fluorescent reflectors. It declined in refrigerator parts and cooking utensils.

It is now disclosed that when WPB moved Jan. 26, 1943 to prohibit the delivery, purchase and sale of Uranium for the manufacture of ceramic products and glass and placed it under allocation for all uses, it was to divert supplies of this element for the production of U 235, the source of the destructive power in the atomic bomb. Prior to that the principal use of Uranium was for the manufacture of ceramic products and glass. It supplied the yellow and ivory glazes for these products.

### The Chemicals Situation.

The Tin-Lead Division of WPB reports that the antimony oxide situation eased somewhat during August although the demand increased as a result of reconversion activity. All priority production was supplied and even some civilian output was aided with authorizations. Cutbacks have occurred to provide a slight increase in supply and the Division has tried to aid the reconversion production of washing machines, mechanical refrigerators and stoves. No substantial increase in allocations is expected for next month.

The position of zinc oxide has improved and WPB has been able to take care of all requirements of the ceramics industry. Reconversion production has been reflected in increased consumption of the industry but WPB expects to meet the demand without difficulty.

Tin oxide continues to be in tight supply. The tin situation is more critical and WPB is now surveying all uses with curtailment of less essential consumption contemplated.

Use of lead for decorative ceramics and decorative leaded glassware is now permitted under an amendment to Order M-384 recently issued. In order to keep the industry operating at a minimum level a 25 percent quota has been assigned for third quarter production of decorative ceramics.

The quota on red lead for paints has been increased from 30 to 40 percent. The red lead quota is approximately 80 percent per quarter.

The supply position of a number of other chemicals is as follows:

Barium carbonate — adequate
Borax — adequate
Lead silicate — good
Soda ash — in close balance, some demands cannot be met
Sodium Antimonate — good
Sodium silico fluoride — good
Titanium oxide — some available for ceramics
Hydrochloric acid — good
Magnesium carbonate — excellent
Sodium silicate — adequate, but transportation difficulties are involved.
Whiting — adequate
Phthalic alkyd resins — Allocations for July for new washing machines, refrigerators and coolers amounted to 118,382 pounds.
Sulfuric acid — Additional quantities were made available for other uses during July as a result of a reduction in ordnance requirements. The supply is in the best position since allocation went into effect. This is due largely to increased production in many areas.

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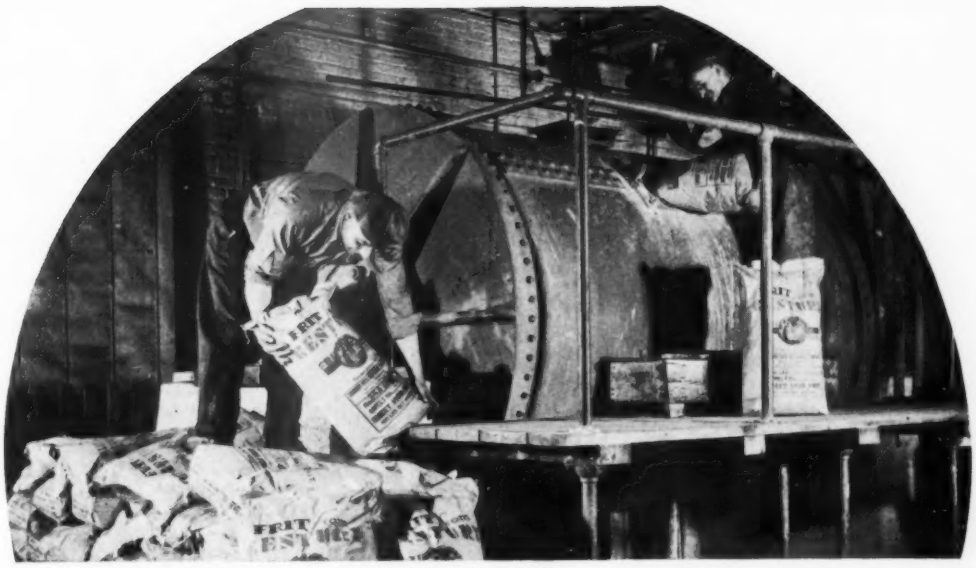
### PRESS TIME BULLETIN

Production ceilings on all consumer durable goods will be removed immediately, Chairman J. A. Krug of WPB said in a V-J Day statement to the press.

Estimated production of domestic mechanical refrigerators in the third quarter is 125,000 and 700,000 for the fourth quarter, Mr. Krug said. Domestic washing machines will be at 50,000 for the third quarter and 500,000 for the fourth quarter. Electric ranges (domestic) are expected to reach 45,000 in the third quarter, and 75,000 to 100,000 in the fourth quarter.

Mr. Krug told newsmen WPB expects to revoke distribution controls on refrigerators in the middle of the fourth quarter. Fractional horsepower motors are expected to be available at double the production of 1939 which was 10,000,000 AC motors.



# 6,000 POUNDS AT A BITE

Now that gas ranges are back in production, this large 6,000 pound mill in the enameling plant of one of the country's leading stove manufacturers will be rolling again on "Century" steel ground coat frit. It's a hungry mill, taking 6,000 pounds of frit at a bite.

Well over 3,000,000 pounds of "Century" ground coat have already gone through this mill. As new production increases this figure will be rapidly increasing also.

Millions of pounds of "Century" ground coat frit were used pre-war, by some of the country's leading enamelers. More millions will be used in post-war production due to the proved quality and workability of "Century" enamels. "Century" ground coats offer the draining properties, firing characteristics and final bond demanded by the most critical of enameling plant superintendents.

You will do well to investigate these enamels which have passed the "proving ground" of daily operation in both box type and continuous furnaces, in jobbing and "single product" plants, and on practically every type of quality porcelain enameled products.

*Century Vitreous Enamel Company*

**6641-6661 SOUTH NARRAGANSETT AVENUE • CHICAGO • ILLINOIS**

→ *from Page 46*

units have been in operation in many plants for over five years. Included are installations in the porcelain enameling field, where the water is used for all mill room needs and in some instances as a water source for the pickle room. Cost of water produced by this equipment is from 1 to 10% of the cost of distilled water, according to Illinois Water Treatment officials.

The portable laboratory unit pictured here is rated at 12 gallons per hour; weighs 35 lb.; is 22″ high, 13″ wide and 8″ deep. Large size units embodying the same principle have flow rates up to 5,000 gph.

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### Corrosion resisting finish for firebrick

Porcelanite is the name of a new corrosion resisting finish developed by O. Hommel Company, Box 475, Pittsburgh, Pa., as a coating and "seal" for brick and clay products.

Porcelanite is said to form a pure white, semi-glazed finish over brick and clay, sealing all crevices. It is used to prevent the corrosive action of gases, flue dust, slag, etc., and for the prevention of discoloration of molten glass, china ware and porcelain enamels by iron oxide present in fire brick. It is designed to resist furnace heats up to 3,000° F.

Manufacturers recommend the new material for hot patching, furnace settings, door linings and for stuffing leaks between brick and iron work.

The refractory chemical comes as a white powder which is mixed with water and applied like paint. For new construction bricks are dipped in the usual manner before laying. It is recommended for spray or brush application, and is said to be adaptable for use with furnace muffles.

## NEW LITERATURE

### The "Min-A-Kit Book"

Youngstown Kitchens (Mullins Manufacturing Corp., Warren, Ohio) has found an inexpensive way to enable thousands of customers to design their own kitchens in miniature with its new "Min-A-Kit Book", a 20-page publication containing 46 models.

The booklet, containing pages in color and lots of information on kitchen planning, is printed on heavy tag stock and contains models of cabinet sinks, base and wall cabinets, stoves, and refrigerators. Kitchen planners can cut out the models, assemble them into life-like dummies, use the cover of the book to form the kitchen walls, and design kitchens of any size and style.

When the book has been cut up for the models, the inside spread, in full color, remains untouched as a reminder for Youngstown Kitchens.

Offered only through national advertising, because of the paper shortage, the Min-A-Kit book is sent upon receipt of 10 cents.

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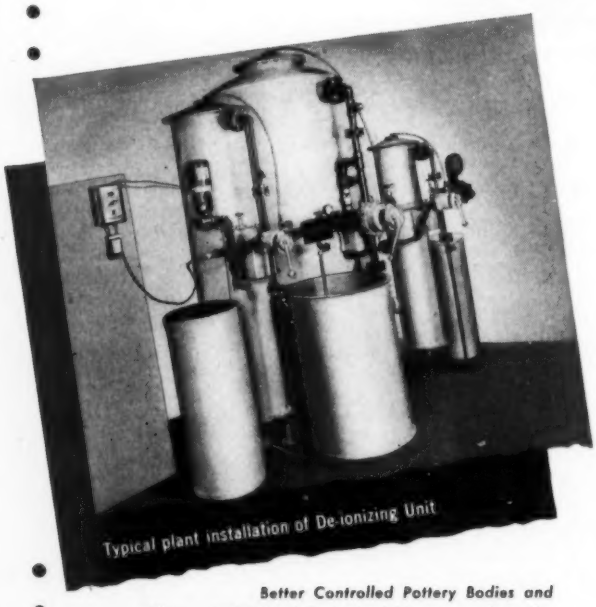
Send your "new literature" to *Finish*.


Lower your rejects by making your enamels with

# DE-IONIZED WATER



Typical plant installation of De-ionizing Unit

*Better Controlled Pottery Bodies and Glazes:* ILLCO-WAY De-ionized Water can help the potter control his body and glaze compositions.

Reduction in rejects and elimination of copper heading have been obtained in leading ceramic plants when De-ionized Water was used in making the enamel. The varying acidic and basic reactions of natural waters affects the proper flocculation characteristics of frit and clay. Adjusting the enamel to make it function properly is costly as it requires materials and takes time.

You can assure yourself of a reliable water for enamel, by installing an ILLCO-WAY De-ionizing Unit. It will produce all the water your plant requires for capacity operation at a cost from 1% to 10% of that of distilled water. No fuel required, no cooling water. Maintenance is simple—no periodic dismantling for cleaning. Write for literature today!

**Illinois Water Treatment Co., 866-9 Cedar St., Rockford, Illinois**

*Water Treatment Engineering*

TESTED IN THE LABORATORY • ILLCO-WAY • PROVED IN THE FIELD

# Here's your Postwar Market

**EVERY SUNDAY EVENING,** United States Steel presents *The Theatre Guild on the Air*, American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.

**THE PEOPLE** who will buy the millions of ranges, refrigerators, washers, tables and utensils when peace comes, are being told about the additional advantages they get with porcelain enamel and U·S·S Steels.

Regularly scheduled advertisements—in magazines which have 22,102,562 readers—remind these readers of the smooth, colorful, sanitary finish they can get only with porcelain enamel. And we are also letting them know that *permanence* can be assured for those qualities when the finish has a base of strong, tough, durable U·S·S VITRENAMEL.

Many enamelists have found in U·S·S VITRENAMEL, the best base for a fine finish. They are true to gage, uniformly flat, rigidly strong. Unsurpassed for ductility, their stamping, punching, drawing and welding qualities speed up the work, insure longer life for presses, dies and tools. The specially processed surface enables the frit – under firing—to form a firm bond with the metal base. These qualities of VITRENAMEL are strong factors in its growing acceptance among manufacturers of quality porcelain enameled sheet metal products.

As your plans for the future take on definite shape, be sure to get current and complete information on U·S·S VITRENAMEL Sheets.

Our technical specialists will be glad to consult with you on matters of design and manufacture. Write for this free service.

## U·S·S VITRENAMEL SHEETS

**CARNEGIE-ILLINOIS STEEL CORPORATION**

*Pittsburgh and Chicago*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

PORCELAIN ENAMEL ON USS Vitrenamel UNITED STATES STEEL

**UNITED STATES STEEL**

→ *from Page 33*

course of the war, the effect of the peace and by domestic events which no one can as yet foresee. However, assuming the projection is correct, the figures indicate that the private construction industry should have for its postwar goal an increase of 136% based on a price level of 1940 — approximately 2⅓ times larger than the prewar market.

### F. W. Dodge report

One last illustration. In F. W. Dodge Corporation's "Construction Potentials" a ten-year period of high volume building construction is indicated "by even the most conservative of postwar possibilities". This corporation, whose statistical services to the building trade are too well known to need further description here, estimates that total construction for the decade following war's end will average about double the period 1930-1939. Residential building construction is expected to be three times the volume of 1930-1939. A break-down of the total is shown in Tables II and III.

Construction of commercial buildings during the period immediately after the war will, of course, derive its stimulus from the high volume of general business activity anticipated at war's end. The prospect for new

TABLE II:
TOTAL NEW CONSTRUCTION
(Annual Averages)

| | |
|---|---|
| 1920-1929 | $ 9,158,000,000 |
| 1930-1939 | 4,843,000,000 |
| Postwar Decade | 9,623,000,000 |

and remodeled stores seems especially favorable. *(A report from the Architectural Forum Magazine indicates that the chain store market for new and remodeled buildings "will exceed $500 million in the first average peacetime year after the war". This estimate is based on annual surveys which reveal that the average yearly expenditure of chain stores for this purpose in the period 1937-1941 was $125 million — 4.25% on new construction and 9.78% on remodeling. The independent store construction market is probably even larger.)*

### Summary

While any single one of the foregoing estimates would serve to illustrate the volume of postwar construction which is anticipated, a number are included to emphasize the fact that the future of this market, the nation's second largest, looks most promising to a representative number of American businessmen well qualified to weigh all factors which might affect it. It would be futile to attempt to correlate the findings of these studies and surveys. Each is different than the other in its opinion, and time alone will determine which is most accurate. None can be taken as a hard and fast prediction, and it is not the intent of their authors that they should be. They are merely opinions — greatly condensed for the purpose of this discussion — of postwar building construction market potentials arrived at by different means and presented for the common good of those interested. Whether or not these estimates sound overly optimistic, the very weight of their source and their general agreement as to conclusion cannot help but create a feeling of confidence that, provided the country enjoys sound policies and good management with respect to its domestic and foreign affairs after the war, the building construction industry faces years of considerably greater than normal activity.

At least these estimates, and many others not included, make it impossible to refute the fact that the *need* for home construction exists. This need was acute even before the war and the increase in our population during the war years, coupled with the growing tendency of our population to divide into more and smaller family units, has added to it. It is likewise impossible to deny that there exists a similar *need* for non-residential construction. Based on records covering the period 1929-1941, non-residential construction has kept pace with residential construction almost dollar for dollar. The combined total of both residential and non-residential need which exists today indicates a potential market for new building construction and repair work that provides the architectural enamel industry with unprecedented opportunities for expansion and profit.

TABLE III: CONSTRUCTION VOLUME BY DECADES*
(Annual Averages in Millions of Dollars for 37 Eastern States)

| TYPE | 1920-29 | 1930-39 | 20 Peace-Time Years | Postwar Decade | % Increase Over 1930-39 |
|---|---|---|---|---|---|
| Commercial | 730 | 247 | 488 | 475 | 92 |
| Educational | 346 | 196 | 272 | 300 | 53 |
| Manufacturing | 400 | 158 | 279 | 210 | 33 |
| Hospitals & Institutions | 118 | 81 | 100 | 150 | 85 |
| Public Buildings | 59 | 108 | 84 | 120 | 11 |
| Religious Buildings | 115 | 38 | 76 | 95 | 150 |
| Social & Recreational | 176 | 73 | 124 | 145 | 99 |
| Miscellaneous | 49 | 25 | 37 | 80 | 220 |
| Non-Residential | 1,993 | 926 | 1,460 | 1,575 | 70 |
| Residential | 1,987 | 719 | 1,353 | 2,157 | 200 |
| Total Building | 3,980 | 1,645 | 2,813 | 3,732 | 127 |
| Heavy Construction | 970 | 950 | 962 | 1,425 | 50 |
| TOTAL CONSTRUCTION | 4,950 | 2,595 | 3,775 | 5,157 | 99 |

(Figures shown in Tables II and III are estimates of postwar building construction volume based on prewar cost levels. The postwar decade is assumed as beginning with the January nearest the end of the war in Europe (Jan. 1946) with relaxation of construction starting at that time.)

*From "Construction Potentials" by F. W. Dodge Corporation.

*Next month: Some characteristics of the postwar building market.*

# Guiding Bombs is part of our defense program

MONARCH QUALITY

Thousands of bombs that have struck their destructive blows on important military targets were guided on their way with bomb fins made by Monarch. We hope our efforts have, in some small measure, helped speed up for final victory.

## Guiding

YOUR PRECISION-MADE STAMPINGS THROUGH ONE OF OUR 3 MODERN PRODUCTION PLANTS WILL BE OUR AFTER-THE-WAR PROGRAM

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*When you think of Stampings, think of*

NEW MONARCH MACHINE & STAMPING CO.

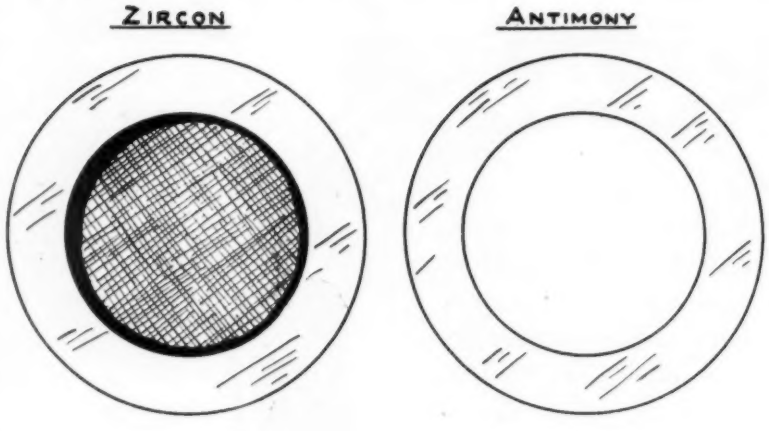
406 S.W. NINTH STREET — DES MOINES 9, IOWA

## Antimony — vs — Zirconia-opacified enamels

*(continued from Page 20)*

PLAQUES FROM ACID TEST

FIGURE 5




### Summary of properties

| *Antimony Opacified Enamel* | *Zirconia Opacified Enamel* |
|---|---|
| **Opacity** | |
| High.<br>Stable on firing. | Highest commercially available.<br>Varies some on firing. |
| **Color** | |
| Slightly purplish compared to zircon enamel. Slightly affected by firing temperature. | Slightly bluish-green compared to antimony enamel. Affected moderately by firing temperature. |
| **Surfaces** | |
| Good gloss.<br>Some tendency toward sagging.<br>Moderate coverage of defects. | Excellent gloss.<br>Little or no sagging.<br>Good coverage of defects. |
| **Working Properties of Slip** | |
| Good set and stability on aging.<br>Good flow characteristics.<br>Good film strength. | Working properties satisfactory with proper clay and electrolytes in mill addition. |
| **Chemical Durability** | |
| Fair acid resistance.<br>Fair alkali resistance. | Poor acid resistance.<br>Good to fair alkali resistance. |

appearance of the circular plaques after testing is illustrated (Figure 5). The circular part in the center of each plaque has been exposed to the boiling acid.

As regards resistance to the attack of alkalies, the zircon enamels appear to much better advantage and, in general, are probably more resistant than the super-opaque antimony frits. However, the results with zirconia opacified enamels vary considerably with the composition used, and may be either better or worse than those obtained with comparable antimony enamels.

From the summary, it is seen that each enamel has certain characteristics in which it excels and others in which it is less satisfactory. Also, there is considerable variation among enamels of the same type. Therefore, the user should know the general characteristics of the two types and the properties of the particular enamels he is planning on using to be sure of its success in a specific application.

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## The Birmingham Story . . . .

*(Continued from Page 26)*

Test burning of smoke pots was a serious problem. Chemical Warfare Service's specifications required that nine test pots be burned of each 1,000 produced. The volume of smoke was such that to burn them out in the open fields would have kept the city under a permanent blackout. This time the city officials came to the front and loaned an unused city incinerator with a stack of sufficient size and height to dissipate the smoke screen without difficulty.

Peak production in the next few months, plus favorable developments on the fighting fronts, brought another quick change in orders. In November, 1944, production was stopped on all three items — thermit, smoke-mix powders and smoke pots. In fact, the plants were shut down; but not for long! The battle of the bulge caused requirements to rise.

Thermit production was resumed in December — and reached 100% of capacity within thirty days after the new contract was signed.

Early in February of this year smoke-mix powder was again produced and the schedule substantially stepped up in the following months.

On February fifteenth, the third Birmingham plant resumed operations — again assembling smoke pots.

### Production now going forward

As this is written, the three plants are still producing. They are employing about one thousand people. More important, they are producing essential materials of war.

While none of the present plants have postwar prospects for Ferro, and no new projects are now contemplated, we feel that the projects have unquestionably "paid off" to the war effort in essential material production.

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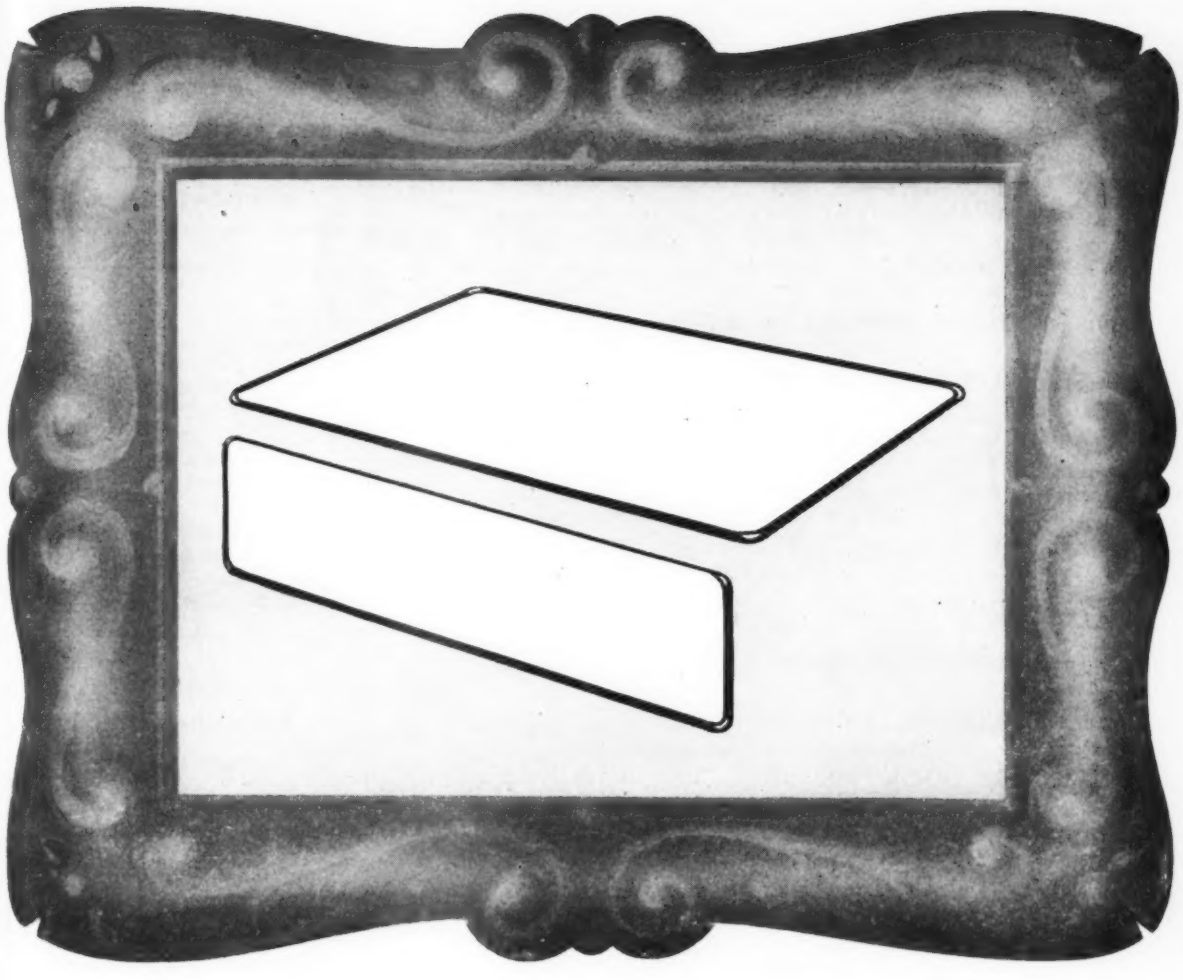

**"LOOKS EASY"** Breakfast sets and table tops enameled, as they are, on properly designed stampings seem simple enough. They would be if inspection were not so critical.

When the housewife buys a breakfast set with VITREO top and leaves, it is a major expenditure. As a result, she does everything but use a microscope to examine every inch of the surface. She is very fussy.

Since tops are such a large part of our output, the whole Vitreous shop is geared to the production of articles that must pass the most rigid inspection standards. Every customer we have profits by this. There is no extra charge.

**VITREOUS STEEL PRODUCTS CO.**
BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*